

# Hitchcock's Machine Tool Blue Book

FEBRUARY, 1936

THIRTY-FIRST YEAR

HARDINGE Ball Bearing Bench Lathe Unit



1" Collet Capacity—9" Swing—Four Smaller Sizes.

*Ask For Bulletin BB*

HARDINGE BROTHERS, INC., - ELMIRA, N. Y.  
CHICAGO - NEW YORK - DETROIT

Sales Representatives in All Principal Cities

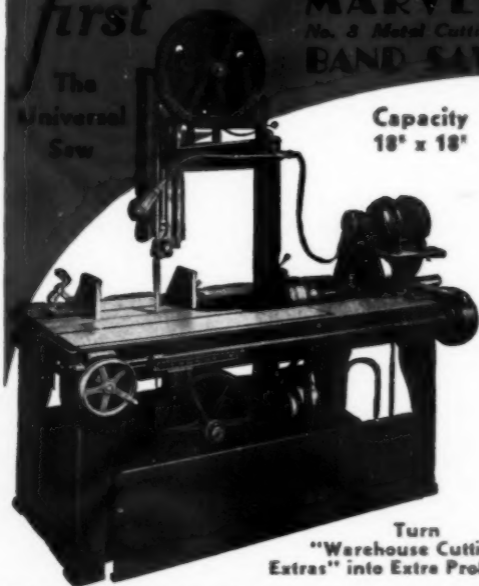
PUBLISHED AT 508 So. DEARBORN ST. CHICAGO

*first*

The  
Universal  
Saw

**MARVEL**  
No. 8 Metal Cutting  
**BAND SAW**

Capacity  
18" x 18"



Turn  
"Warehouse Cutting  
Extras" into Extra Profits

When you select the *first* saw for each individual shop or department, be sure it's the *universal* No. 8 MARVEL Metal Band Saw that handles *any job*—the lightest, most delicate work, as well as extremely large and heavy work to 18" x 18"; will cut accurately, straight and square; will cut at any angle, to 45 degrees to right or left; will do notching, blocking, coping and roughing-out work. With a No. 8 MARVEL, no job will "stump" you. As builders of a most complete line of saws (9 types from small low-priced general purpose hack saw to great automatic production saws and a giant hydraulic), we unhesitatingly recommend "a No. 8 MARVEL Band Saw first." New improved 1935 model will cut off accurately 9" round No. 1020 steel in 20 minutes.

Write for Bulletin No. 800A

**ARMSTRONG-BLUM MFG. CO.**

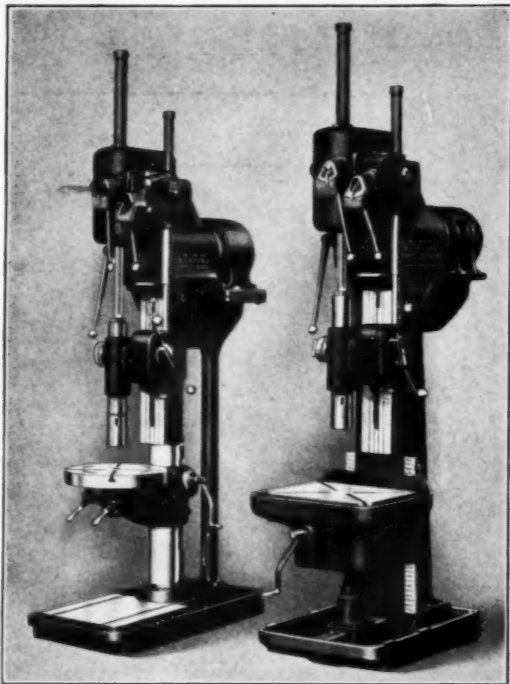
"The Hack Saw People"

341 N. Francisco Ave.,

CHICAGO, U. S. A.



# For Low Cost Drilling



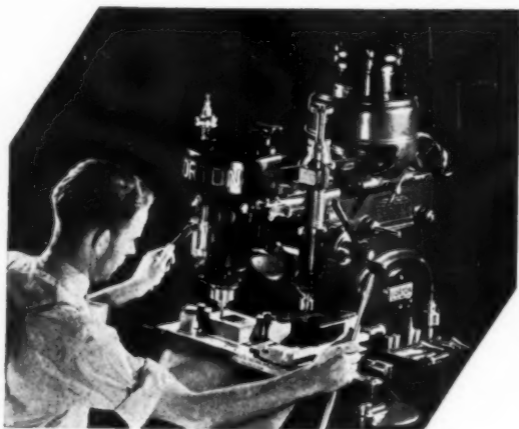
21", 24" and 28" Super-Service Uprights, round and box column types, set a new standard for convenience, stamina, accuracy and general production efficiency. Anti-friction bearings throughout, automatic oiling, no friction clutches. All speed and feed changes instantly obtained thru sliding gears controlled by a single lever.

*Write for booklet U-22H and see the possibilities of these machines*

**The Cincinnati Bickford Tool Co.**  
OAKLEY, CINCINNATI, OHIO

# DUPLICATE DIES

## *at Half the Cost*



Die-casting and small drop forging dies, multiple and single cavity molds, etc. can be reproduced by Gorton Duplicators at half the cost of the ordinary methods—and with better accuracy. Mail the coupon for Duplicator bulletin.



George Gorton  
Machine Co.

1115 13th St.,  
Racine, Wis.

Send me your bulletin on Die and Mold Duplicators.

Name .....

Company .....

Address .....

# Hitchcock's **Machine Tool Blue Book**

**Selected  
Circulation**

**20,000  
Monthly**

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FEBRUARY, 1936

THIRTY-FIRST YEAR

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## ● **A Point to Remember**

With a circulation of over 20,000, checked annually with Dun and Bradstreet for responsible ratings, the "Blue Book" covers far more large buying units for the advertising expenditure than any other publication in its field.

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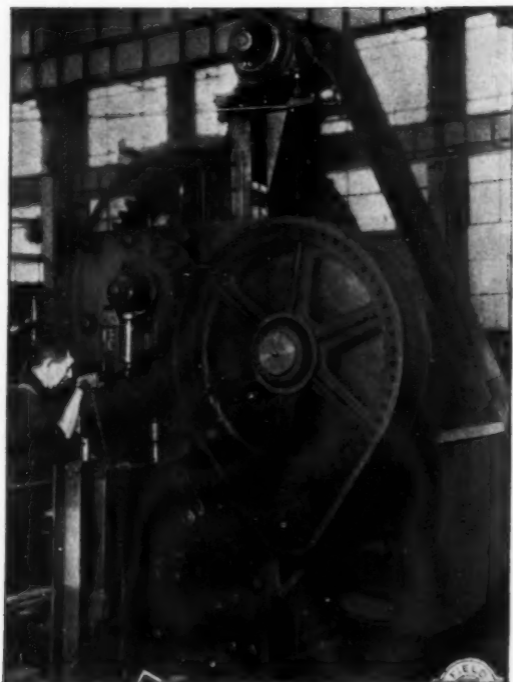
*Published By*

**Hitchcock Publishing Co.**

**508 S. Dearborn St.,**

**Chicago, Ill.**

*Consult the Classified Finding Index for your requirements*



## **"Buffalo" Billet Shears and Special Bar Cut- ters for Lower Costs—**

Hundreds of plants are saving the cost of a Buffalo Billet Shear or special bar cutter annually with one or more of these machines—cut any shape—in capacities up to 8- $\frac{3}{4}$ " rounds. *Write for prices.*

**BUFFALO FORGE CO.,** 161 Mortimer St.,  
Buffalo, N. Y.

THERE IS A DIFFERENCE IN DRILLS!



.... you  
will choose  
**SKILSAW  
DRILLS**

if you compare  
every feature

### Here's why SKILSAW DRILLS are better!

**MOTOR**—Its greater overload tolerance minimizes heat and lengthens life. Delivers more power under load.

**SWITCH**—Has longer life because of 100% overload capacity and because all the mechanism is fully enclosed in bakelite housing!

**GEARS**—Helical cut gears of tougher, stronger steel last longer and run quiet.

**BEARINGS**—Highest quality ground and lapped ball bearings are grease sealed. They are mounted in all positions to compensate for radial and thrust loads,—to minimize friction and eliminate vibration!

**FRAME**—Die cast aluminum frame is more compact, lighter in weight and 50% stronger!

We invite a side-by-side comparison with the drills you now use. You will find SKILSAW DRILLS are better in every detail... that they drill more holes per hour, save more in operation, cost less to maintain! SKILSAW DRILLS are engineered to produce these results ... *to stand the gaff*... yet they cost no more! The next time you buy insist on SKILSAW DRILLS and you'll never want any other kind!

**MADE IN 14 POWERFUL MODELS**

*See Your Distributor or  
Write for Our New Catalog*

**SKILSAW, INC.**

**3304 Elston Av. Chicago**

**210 East 40th St., New York City**  
**312 Omar Avenue, Los Angeles**

**CANADIAN OFFICE—**

**85 Deloraine Ave., Toronto**

A COMPLETE LINE OF 88 TOOLS  
is made by the makers of

**SKILSAW—The Portable Electric Handsaw**

DRILLS GRINDERS BUFFERS SANDERS BLOWERS

**YOU CAN COUNT ON  
HASKINS EQUIPMENT**

## **FLEXIBLE SHAFT MACHINES....**

***OF PROVED SUPERIORITY***

For grinding ... polishing ... cleaning ... wire brushing ... and many other similar operations.

Haskins equipment is cutting costs and increasing production in thousands of industrial plants. It can do the same for you.

*Send for  
this new  
illustrated  
catalog*



**WRITE NOW**

to R. G. Haskins Company, 4654 W. Fulton St.,  
Chicago, for this forty-page booklet describing  
many applications of flexible shaft equipment in  
the various industries.

**HASKINS**

# The New GROB Open End BAND SAW



for  
**INTERNAL  
and  
External  
Sawing**

**No Welding**

**Electrically  
Controlled**

**Cutting Speeds  
50-75-100-150 F. P. M.**

*Write for Circular*

## GROB FILING MACHINE

**Type B-3  
BENCH MODEL**

Simply constructed.  
easy to operate. Makes  
smooth, straight, clean  
cuts with speed and  
accuracy.

**Larger Sizes  
Also Available**

*Write Today for  
Complete Information*



## GROB BROTHERS

9700 National Ave.,

West Allis, Wisconsin

ESTABLISHED 1890

## Hardinge Brothers, Inc.

FRANKLIN HARDINGE, Chairman  
EDWARD G. ANDERSON, President  
LEIGH R. HARDINGE, Vice President  
CAROL R. LAUX, Cash Manager  
CABLE ADDRESS: "HARDINGE" ELNIRA



PRECISION LATHES  
MILLING MACHINES  
AND ATTACHMENTS  
DROPS AND COLLETS

GENERAL OFFICES & FACTORY  
ELMIRA, N. Y.

OFFICE OF  
C. R. LAUX  
Vice President

January 15, 1936

Hitchcock Publishing Company,  
508 South Dearborn Street,  
Chicago, Illinois.

Attention: Mr. George O. McKibben,  
President.

Gentlemen:

The results from our advertising in HITCHCOCK'S MACHINE TOOL BLUE BOOK have been most gratifying. This assertion is based on actual inquiries received. Many of those inquiries come from well rated organizations and influential men in those organizations.

Investigation also reveals that our products are given "recognition prestige" among concerns which did not actually forward inquiries. We feel that the recognition of a product is essential to assisting our representatives in their efforts to establish steady customers.

The best indication of our satisfaction is our recent renewal for twelve additional pages.

Yours very truly,

HARDINGE BROTHERS, INC.

D. R. Laux,  
Vice President.

DRL:B

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## Quality Circulation —Quality Inquiries

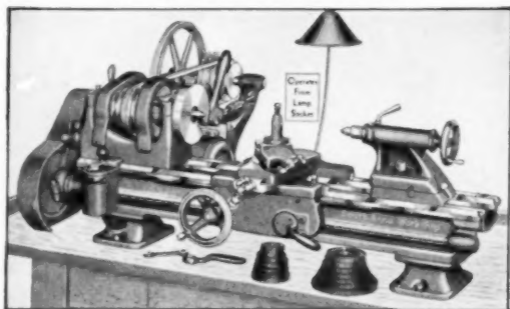
The circulation of the "Blue Book," which is over 20,000 monthly, is carefully selected to cover those who have the money to buy what they need. It is checked annually with Dun and Bradstreet for that purpose.

The letter on the opposite page, from Hardinge Brothers, Inc., Elmira, N. Y., is further evidence of how this works out for the benefit of the advertiser. The results have been not only "most gratifying" in number, but in their high quality. It also gave "recognition prestige" to their products where no actual inquiry was made.

But actions speak louder than words. Hardinge Brothers, Inc., renewed their order for the second year five months before their first year's order expired.

The "Blue Book" furnishes a quantity circulation and a quality service that cannot be approached by any other medium for the amount expended by the advertiser.

## NEW V-BELT DRIVE ON THE NEW 1936 MODEL 9-INCH "WORKSHOP" LATHE



The South Bend Lathe Works, South Bend, Indiana, announces that the new V-belt drive is now optional on the new 1936 Model 9-inch "Workshop" precision lathe in place of the standard flat belt drive.

The 9-inch "Workshop" horizontal V-belt Motor Driven Bench Lathe has a four-step cone headstock, with a single V-belt drive from the countershaft. This provides eight spindle speeds, four on open belt and four in back gear. The speeds range from 44 to 585 R.P.M.

The countershaft is similarly equipped with a four-step V-pulley for single V-belt motor drive. The V-belt drive can be obtained only with the adjustable type countershaft, which adjustment slackens or tightens the belt tension to permit a shifting of the belt from step to step on the cone pulley.

This new improvement gives the lathe an abundance of extra power to work with the toughest and heaviest of metals, and makes this small lathe particularly suitable for special production work in manufacturing.

In addition to the V-belt drive the 1936 Model 9-inch "Workshop" lathe features 10 new improvements, including the new twin gear reverse for right and left hand threads and feeds, a ball thrust bearing on the headstock spindle, larger spindle bearings, etc. Strong and rigid, with the bed cast of 50% steel and 50% nickel iron, the lathe undergoes 64 major tests to bring all alignments to

(Continued on Page 14)

# SUNDSTRAND BALANCING TOOLS

Save time and money. Anti-friction discs; strong, well made, economical. Range in size from No. 1 Bench, with capacity for 800 lbs., to No. 5 Extra Heavy, with capacity for 24,000 lbs. Others available for balancing airplane propellers, balancing and drilling flywheels, pulleys, etc.

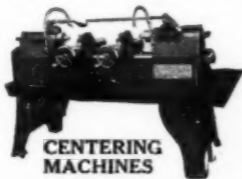


Write, *today*, for details on these and other Sundstrand cost-cutting products.



No. 56 illustrated, others available. Fast, accurate, an operation saver, a mighty profitable investment.

## BENCH CENTERS



**CENTERING  
MACHINES**

Accurate, compact, portable. Adjustable heads. Quick-acting spindle. Seven sizes.



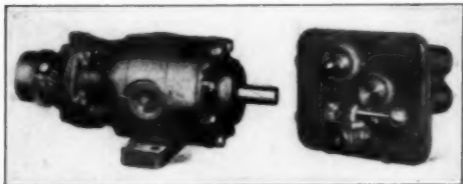
These Sundstrand tools, like our Lathes and Milling Machines, cut costs and make work easier. \* \* \*  
**INVESTIGATE!** Address our Dept. H for details.

within .001". There are a choice of four bed lengths of 3-ft., 3½ ft., 4 ft., and 4½ ft.

The added features of conveniency in size, adaptability in the complete fitting of attachments, and of a new low price, make this metal-working lathe a very paying investment.

Information about this lathe may be secured from the Technical Service Department, South Bend Lathe Works, South Bend, Indiana.

### **NEW SUNDSTRAND HYDRAULIC PUMP, CONTROL VALVE AND CIRCUIT**



The Sundstrand hydraulic pump, which is designed and manufactured by the Sundstrand Machine Tool Co., Rockford, Ill., consists of a variable displacement pump which gives two adjustable feeds and a constant displacement pump that provides rapid traverse. Both pumps are incorporated in a single housing and driven by a single shaft, there being only two revolving parts in the entire mechanism.

The variable displacement pump is an entirely new design of the multiple piston type, which gives a positive uniform feed. Two pre-set rates of feed are provided, both of which are adjustable throughout their entire range.

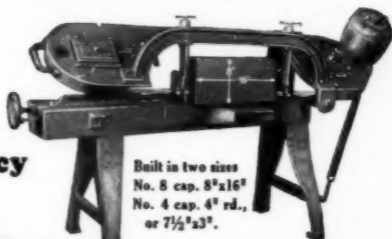
The constant displacement pump is a Sundstrand Rota-Roll pump, the operating principle of which comprises a roller that revolves in positive contact with a rotor or ring, like one of the rollers against the outer race in a roller bearing, thus providing a smooth rolling action and eliminating sliding blades and gears.

Both the piston and constant displacement pumps are built to high standards of precision and are quiet in operation. The two revolving parts are mounted in ball bearings and, with the simplified structure, assure low power consumption and a design that is durable and dependable.

**(Continued on Page 16)**

# MEETING TODAY'S DEMAND!—

**For  
Speed  
and  
Accuracy**



Built in two sizes  
No. 8 cap. 8" x 16"  
No. 4 cap. 4" rd.,  
or 7½" x 3".

## WELLS

*Will Cut All Kinds of Tubing*

## **Metal Cutting** BAND SAW

From 30 to 50% in cutting time can be saved with this fast working saw which operates at high speed without coolant. Material can be adjusted quickly and easily to any angle with the two-piece swivel vise. All kinds and shapes of metal can be handled in all sizes up to the generous capacity of the machine.

Rigid saw guides insure accuracy and no time is lost in re-aligning or re-cutting material. As every inch of the blade is used in the *continuous cutting* operation, the wear is even and the blade does not cut untrue. Hundreds of duplicate pieces can be cut without showing a variation of .005" in thickness.

*Send for the Illustrated Booklet*  
**DEALERS WANTED!**

**WELLS MANUFACTURING CORP.**  
315 Seventh Ave., THREE RIVERS, MICHIGAN

The Sundstrand control valve or panel, shown in the illustration, provides rapid approach, feed, adjustable dwell and rapid return. A second or slower feed may be obtained, and operation of feed and rapid traverse sequence is controlled by adjustable dogs.

Jump feed or rapid traverse between intermittent cuts may also be obtained by means of trip dogs.

The control valve consists of pilot, reversing and selector valves, all of which are operated from the low-pressure source. In the panel is also the relief valve for both high and low-pressure circuits.

The Sundstrand hydraulic circuit is a self-locking circuit which provides smooth uniform feed, shockless high speed traverses and prevents tool from jumping ahead at the completion of a cut or during an intermittent cut.

"Climb" cutting on a milling machine can also be done with this circuit, which proves that slides do not jump ahead as tools break through, thus illustrating to the best advantage the suitability of the Sundstrand circuit for all machine tool feeds.

### THE UTILITY KEYSEATER—Bench and Floor Type

The South-Side Machine Company, 3761 Eiler St., St. Louis, Mo., has developed, for the benefit of concerns in the machine building and repair trades, the inexpensive Utility Bench and Floor Type Keyseater.

This is a hand-operated machine, rigidly built, and is claimed to handle work quickly and efficiently, comparable with any of the high-priced power-driven machines. It is compact, requiring only a minimum amount of space.

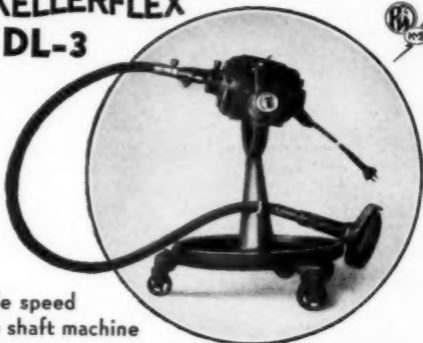
The Utility will cut keyways from  $\frac{1}{2}$  to  $2\frac{3}{8}$  inches in bore as standard. If necessary, larger bores can be arranged. In length, keyways up to 7 inches, either straight or taper can be made. With the proper bars, the following cutters are standard on The Utility: With the  $\frac{1}{2}$ " bar:  $\frac{1}{8}$ " and  $\frac{3}{16}$ " cutters; with the  $\frac{3}{4}$ " bar:  $\frac{3}{16}$ ",  $\frac{1}{4}$ ", and  $\frac{5}{16}$ " cutters; with the 1" bar:  $\frac{1}{4}$ ",  $\frac{5}{16}$ ",  $\frac{3}{8}$ ",  $\frac{7}{16}$ ", and  $\frac{1}{2}$ " cutters. Cutters are also available in thirty-second sizes.

Further information will be mailed upon request.

(Continued on Page 18)



# THE KELLERFLEX DL-3



A single speed  
flexible shaft machine

## BUILT FOR HEAVY DUTY

Heavy duty motor, heavy duty flexible shaft, Timken roller bearing handpiece, low roller floor stand with tool tray. Universal swivel mounting, shaft adjustment, ball bearing casters, grinding wheel guard, convenient switch. Handpiece is interchangeable with right angle sanding and polishing attachment, low speed reaming attachment, collet handpiece, etc.

**Pratt & Whitney Co.**  
Hartford, Conn.

**KELLER  
DIVISION**



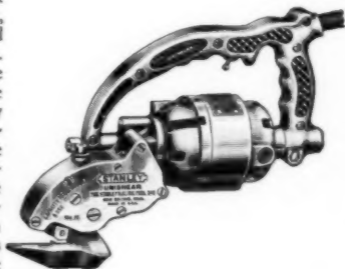
*Write for information*

## TWO NEW STANLEY TOOLS

The new Stanley Portable Unishear No. 16, and the Stanley Tool Room Grinder, here illustrated, are manufactured and marketed by The Stanley Electric Tool Division, The Stanley Works, New Britain, Conn.

The Unishear No. 16 is a motor driven portable shear that cuts up to 16 gauge ( $\frac{1}{16}$ " ) hot rolled steel (other materials in proportion) at a speed up to 15 ft. per minute. It cuts straight lines, curves, angles, and notches with hair line accuracy, and turned up edges can be cut off close to the surface. Inside cuts can be made after punching a 2-inch hole in the material and slipping the yoke through the hole.

No. 16 Unishear is surprisingly light, easy to handle, and it is 100% safe. The pivoted handle permits using the machine in many positions and provides a comfortable grip for the operator. A double pole toggle switch is conveniently located in the handle. Blades are interchangeable and are easily removed for sharpening.



Some special features are: Patented Unishear cutting action; blades easily removed for sharpening; strong aluminum alloy housing and compact design gives great strength and minimum weight; powerful motor and steel worm, mounted on seal type ball bearing at front and bronze sleeve bearing at back; bronze worm gear, heavy eccentric shaft mounted on oversize ball bearings; rocker aligned between bronze guides; gear case sealed against oil leakage and entrance of dirt, encloses mechanism in continuous oil bath; heat treated alloy steel yoke with micrometer blade clearance adjustment.

Capacity, 16 gauge ( $\frac{1}{16}$ " ) hot rolled steel or galvanized iron—softer materials in proportion. Speed, as you feed—up to 15 ft. per minute. Minimum radius  $1\frac{1}{2}$ ". Length,  $13\frac{1}{2}$ ". Net weight,  $10\frac{1}{4}$  lbs. Universal type motor oper-

(Continued on Page 20)

**FOOTBURT**



## **A Single Spindle Footburt Sipp Sensitive Drill**

**Made in three  
sizes of single  
and multiple  
spindle models**

### **More holes with this machine**

**Why?** Because you can change speeds in two seconds or belts in ten seconds—because the automatic idlers keep the belt pulling to capacity at all times—because the full ball bearing equipment and accurate machining gives a smooth, fast cut.

*Write for No. 650 Folders*

**The Foote-Burt Company, Cleveland, O.**

**FOOTBURT**

ates on either D.C. or A.C., 60 cycles or less. Voltages 110, 220, or 250.

The new Stanley Tool Room Grinder, for relieving dies and punches, for correcting distortion from hardening, and for a wide variety of miscellaneous grinding operations, is the latest development in this type of machinery. It is small, light, fast and powerful, and it is inexpensive. It will take care of a multitude of jobs in machine room, in tool and die rooms, and on pattern and model work.

Runs from light socket— $\frac{3}{8}$  H.P., 18,000 R.P.M. Used in tool post, draw-in collet or for free hand grinding. Handles wheels from  $\frac{1}{2}$ " to 2" diameter, shaped grinding pencils of various forms, and metal-cutting bits for aluminum, white metal, type metal and brass.



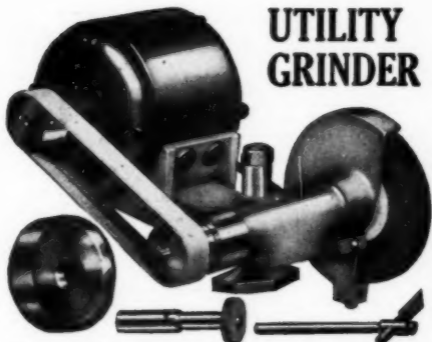
## INTERESTING BOOKLET PROMOTES STAINLESS STEEL

The beauty, the popularity, and the enduring radiance of Stainless Steel is interestingly presented in a new seven-color booklet prepared by Joseph T. Ryerson & Son, Inc. This new booklet photographically presents dozens of stainless articles and shows Allegheny Stainless Steel applications in all lines of industry.

It demonstrates the increasing popularity of stainless steel for all types of products—also its use in equipment and production machinery where longer life and improved processes are factors.

The Ryerson-Allegheny Stainless Steel Booklet is being sent upon request to present Stainless Steel users and to those who have a possible application for the steel. If you are using or are planning to use Stainless Steel and will write on your company letterhead explaining your interest, a copy of this booklet will be sent you by Joseph T. Ryerson & Son, Inc., Lock Box U, Chicago, Illinois.

*(Continued on Page 22)*



**Complete as above \$65.00**

EXTERNAL or INTERNAL GRINDING on a Lathe, Shaper or Planer. Make your old Tool and Cutter Grinder a self contained unit, replace the spindle head with a Utility Grinder, also can be adapted to internal Grinding Machines.

MOTOR—Constant speed,  $\frac{1}{4}$  H. P., heavy duty, Ball Bearing 3500 R. P. M. No metal contact between motor and bracket. Rubber insulation absorbs motor vibration.

GRINDING SPINDLE—Alloy steel, standard precision ball bearings, spindle adjustment automatic regardless of temperature.

## **E-Z SET BORING TOOL**



**\$13.50 to \$27.50 with shank and bit.**

COMPACT, RIGID. Small body, large boring capacity. Adjustment actuated by a worm. Straight or taper shank. Adjustable to Jig and Fixture, Production or Maintenance work.

*See your dealer or communicate direct with us.*

**Sold on a Money Back Guarantee**

**F. A. MAXWELL COMPANY**  
BEDFORD, OHIO

with the curved section of highly polished plate glass where exposure takes place. After exposure it deposits the printed sheets within convenient reach of the operator.

The variable speed rheostat controls the speed from 4" to 30" per minute to 12" to 60" sheets per minute at high speed. The machine comes with either three or four mercury vapor tubes to provide the necessary illumination, and each tube is securely mounted, independently wired and easily accessible.

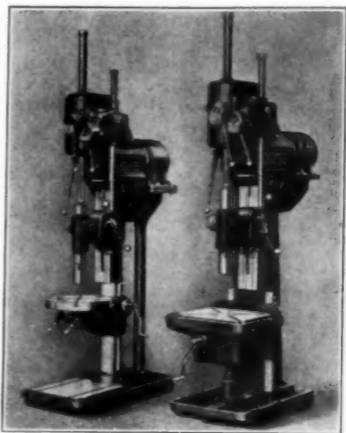
Further information may be secured by writing directly to the manufacturers, the C. F. Pease Company, 813 North Franklin Street, Chicago, Illinois.

### UPRIGHT DRILLS INCORPORATE NEW FEATURES

The Cincinnati Bickford Tool Company has introduced a line of 21, 24 and 28-in. SUPER Service Upright Drills which involves marked improvements. The illustrations show the design of both round and box-column types. The 24 and 28-in. sizes provide 12 speeds in ranges from 60 to 1000 r.p.m. or 90 to 1500 r.p.m. and nine rates of power feed.

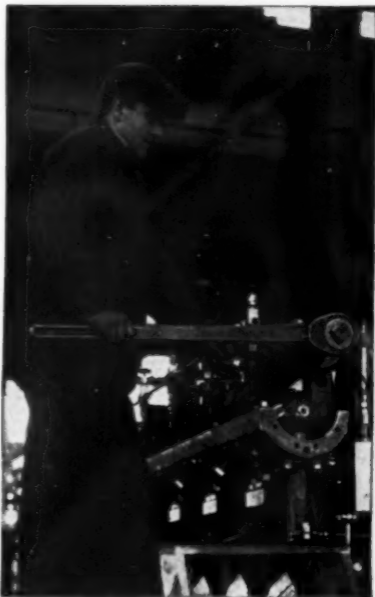
Speeds and feeds are each controlled by a convenient lever fitted with direct reading plates.

Reversing motor application takes the place of former mechanical reversing clutches in tapping. A lever at the left of the head operates push buttons controlling the forward and reverse rotation and the stopping of the spindle. A standard constant speed motor, suitable for about 20



(Continued on Page 26)

WHEN a wrench is specified as equipment — particularly when the equipment goes to sea — the wrench must be entirely fool-proof and rugged.



## THE LOWELL BRIDGE BUILDERS WRENCH

is furnished as an emergency reversing lever on a well known Diesel Engine as shown in the illustration above. Once a LOWELL is on a shank or shaft it stays there until the work is done—all the operator does is *pump*. And it's **STRONG**—a two-foot LOWELL WRENCH will successfully resist a straight pull of over a ton!

*Write Today for Catalog Showing Complete Line of  
LOWELL Heavy-Duty Wrenches*

**LOWELL WRENCH CO.**  
**WORCESTER, MASSACHUSETTS, U. S. A.**

reversals per min., is used in connection with a magnetic reversing starter.

The spindle is mounted on anti-friction bearings. Spindle sleeves have been materially increased in diameter. The rack teeth are integral with the spindle sleeve. A spring bumper effectively cushions the spindle return. These design changes, in conjunction with heavier construction, serve to eliminate rack and pinion difficulties. The housing of the box column is one-piece construction. Anti-friction mountings are employed throughout and oiling is automatic.

Adaptability is provided to suit requirements in connection with multiple drill heads or gang-drill production.

For complete information write to The Cincinnati Bickford Tool Company, Oakley, Cincinnati, Ohio.

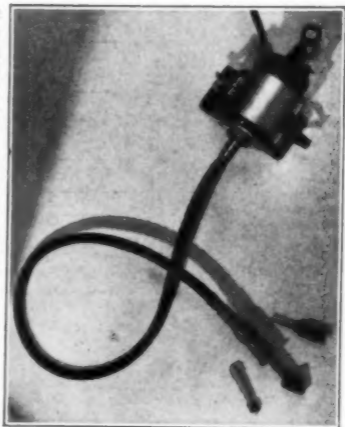
### THE NEW JARVIS SPEEDWITCH

This latest high-speed flexible shaft unit of The Chas. L. Jarvis Co., is equipped with a  $\frac{1}{3}$  H.P. ball bearing electric motor, 18,000 R.P.M.

The motor is mounted in a combination bench and overhead suspended base. The flexible shaft, which is especially designed for high speed, is a Jarvis product.

The hand piece is ball bearing, equipped with special precision bearings for thrust as well as radial load, to be used with  $\frac{1}{4}$ " collets.

The Speedwitch is being marketed as an industrial unit, especially for high-speed grinding, sanding, and polishing



(Continued on Page 28)

# a REVOLUTIONARY new screw and pipe extractor

—the **RIDGE** *LonGriP*



**R**EMOVES tightest frozen screw and pipe ends that have heretofore defied all conventional types of extractors... will not slip, ream, bottom, spread or wedge broken ends... easy extraction of broken ends deep in hole... once driven in, straight-flute *LonGriPs* "stay put"—won't feed into or out of broken end, as with old-style extractors... the only extractor that permits drilling to a thin shell to relieve strains and then engages broken threaded ends their ENTIRE LENGTH, seizing them safely.

**B**ROKEN ends *have* to come out with the new **RIDGE** *LonGriP*, because flutes are straight, not tapered. Grip firmly down entire length inserted. Turn extractor and out comes broken end. *LonGriPs* mean the end of your troubles extracting broken threaded ends.

See the **RIDGE** *LonGriP* at your Jobber's or write for folder. Sets include extractor, drills and drill guides for each size broken screw end.

THE RIDGE TOOL CO., ELYRIA, OHIO

**RIDGE**  
**LonGriP**  
STRAIGHT-FLUTED  
SCREW AND PIPE EXTRACTORS

with profile shaped grinding wheels up to and including 2", suitable for mold, metal pattern and die work, also for cleaning welded joints.

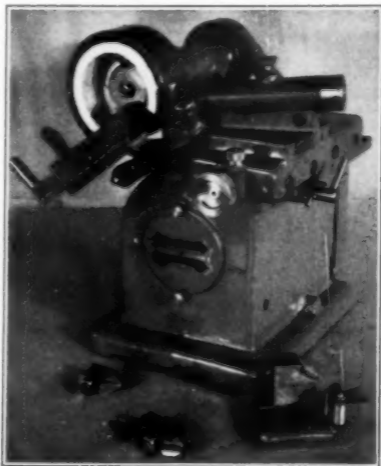
Due to its extreme flexibility it can be used in hard-to-get-at places.

For further information write to The Charles L. Jarvis Company, Gildersleeve, Conn.

### NEW OLIVER No. 21 DRILL GRINDER

The New Oliver No. 21 Drill Grinder is the result of many years' effort to solve the problem of simply and accurately grinding small drills.

The greatest difficulty in grinding small drills is inserting them directly in the machine and getting the proper setting. This difficulty has been overcome in the Oliver No. 21 by setting the drill in a jig, which can be placed where the light is good and where an accurate setting is easily made; this jig is then



transferred to the machine and the drill ground without further adjustment.

The machine consists of a base containing the motor and supporting a grinding wheel bearing and a carriage. The carriage has a bearing which supports a graduated arc and holding fixtures.

(Continued on Page 30)

# ATLAS DRILL PRESS DOES 5 HOUR JOB IN 2 HOURS

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The Reynolds Electric Company, prominent electrical product manufacturers of Chicago, find Atlas Drill Press equipment efficient and economical. Manufacturing steel switch parts, they are tapping between eighteen hundred and two thousand 9-36 threads per hour with an Atlas Model 70. The press is running full time, eight hours a day. Its purchase represented a very large saving, the price being only a fraction of other equipment considered. On this same Atlas, Reynolds is now doing in two hours a tap job that formerly required five hours on a regular tapping outfit.

Atlas Drill Presses are standing up under this and many other similar jobs and maintaining their accuracy. They will do the same in your plant. Made in four sizes, bench and floor models. Prices range from \$14.45 to \$39.45. *See them at your jobbers or write direct for new 1936 catalog of LATHES and DRILLS.*

**ATLAS PRESS COMPANY**  
250 N. Pitcher St., Kalamazoo, Mich.

*Complete display at Atlas Sales Co., 35 E. Wacker Dr., Chicago*

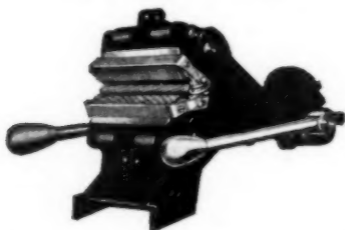
The jig is a pair of jaws in which the drill can be clamped. It is entirely independent of the machine, and a gauge is provided for properly setting the drill in the jig. After the drill is set, it is placed in the holding fixture and one lip is ground; the jig is then reversed for grinding the second lip. Means are provided to bring both lips exactly the same length.

Drills can be ground with various point angles from 80° to 180° and shoulder drills may be ground on the shoulder as well as on the point. The rated capacity of the machine is  $\frac{3}{32}$ " to  $\frac{1}{2}$ " drills. However, by means of a collet holder, drills from  $\frac{3}{32}$ " to No. 57 may also be ground. The machine may also be arranged to grind left-hand drills, also the thick-web type of oil hole drills for crankshaft drilling.

Power is supplied by a  $\frac{1}{4}$  H.P. motor and drive is by a vee belt to the ball bearing wheel spindle.

The Oliver Instrument Company, Adrian, Michigan, will be glad to furnish further information upon request.

### PORTABLE BELT LACER



The Safety Belt Lacer Company of Toledo, Ohio, has just recently introduced a portable belt lacer with jaws that only contact the hooks. It is claimed that this feature insures even firm pressure in lacing a belt, each hook being imbedded deeply even with the surface of the belt and with identical amount of pressure applied to each hook. It is further claimed that angle jaws give perfect vision to operator while lacing. Machine laces up to six inches in one operation and lacing may be started by using one handle, leaving other free to properly insert belt and hold it in exact position. The manufacturer will be glad to furnish further information upon written request.

*(Continued on Page 32)*

# KRW Hydraulic and Sensitive ARBOR PRESSES

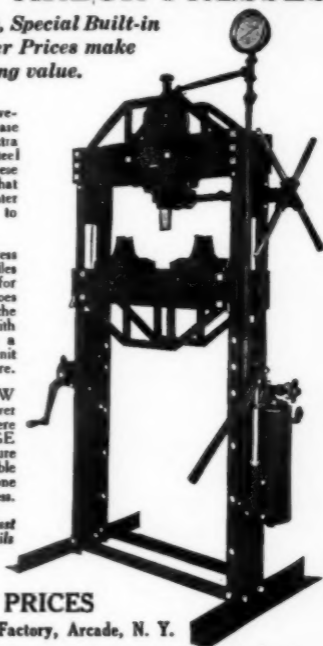
*New Improvements, Special Built-in Features and Lower Prices make them an outstanding value.*

**T**HE last word in convenience, efficiency and ease of operation. Built extra strong and well braced, with steel trusses electrically welded, these presses will withstand strains that would cause presses of lighter and inferior construction to buckle or collapse.

Hand wheel for sensitive press operations has sliding handles which pull out to the ends for increased leverage. Work does not have to be changed from the work table as is the case with other make presses having a separate sensitive press unit mounted on the side or elsewhere.

The importance of this KRW feature as a time and labor saver can be appreciated. Also there is **NO EXTRA CHARGE** for this important built-in feature on a KRW Press. Work table can be raised easily with one hand. A strictly one-man Press.

*Write for special circular, just off the press, giving full details and specifications of all KRW Arbor Presses.*



## PRICES

**F. O. B. Factory, Arcade, N. Y.**

- |   |          |
|---|----------|
| No. 37—35 ton Hydraulic and Sensitive Arbor Press (hand operated)     | \$128.00 |
| No. 37B—35 ton Hydraulic and Sensitive Arbor Press (air-oil operated) | 128.00   |
| No. 37E—50 ton Hydraulic and Sensitive Arbor Press (hand operated)    | 150.00   |
| (Can also be furnished in air-oil operated at same price)             |          |
| No. 37F—70 ton Hydraulic and Sensitive Arbor Press (hand oper. only)  | 275.00   |
| Gauge and fittings, \$15.00 extra on all presses.                     |          |

## K. R. WILSON

**10-16 Lock Street, Buffalo, N. Y., U. S. A.**

**EXPORT DEPARTMENT**  
90 West St., New York, N. Y.

**WEST COAST BRANCH**  
722 Mateo St., Los Angeles

## NEW MANN PRECISION SQUARE

A new Precision Square made of heat treated cast iron is being introduced by the Mann Instrument Company of Cambridge, Mass. It is by the heat treatment between the preliminary and final machining operations to relieve internal strain that exact measurements are guaranteed.



The Precision Square measures  $4\frac{1}{2} \times 4\frac{1}{2} \times 1\frac{1}{2}$  inches with scraped faces which form right angles to within 0.0001" in  $4\frac{1}{2}$ ".

## QUICKWORK MOVES TO CHICAGO.

The Quickwork Company, makers of Rotary Shears, Power Hammers and other metal-working machinery, formerly of St. Marys, Ohio, are now located in their new plant at 900 N. Spaulding Ave., Chicago, Ill. In addition to the lines for which they have been so well known in the past, they are now building welded steel press frames, welded steel columns for power hammers and other welded, rolled steel assemblies.

---

A new combined catalog and reference book on Ideal motor and other maintenance equipment, also electrical supplies, has been issued by Ideal Commutator Dresser Co., Sycamore, Ill. The work has been completely revised because of improvements and additions to the line in the past five years. Special mention is given commutator and slip ring maintenance, although there is an abundance of general information in the sixty-eight pages, including tables and formula.

(Continued on Page 34)

# ... For Stacking and Storage of Boxes and Pans **USE STACKRACKS**



*Write for circular.*

*For prices specify  
outside dimensions of  
boxes to be stacked.*

*State approximate  
weight of contents.*

Patents Pending

## **Saves Space, Time, and Labor**

Store boxes and pans in an orderly manner—one on top of the other. Each stored unit is easily and quickly accessible as the top one...each stored unit can be moved, changed or replaced without disturbing any other.

The STACKRACK is ideal for use on assembly floor, in machine shop, under work bench, and for stockroom control. In fact, STACKRACKS can be used to advantage wherever you have a storage and stacking problem. STACKRACKS are made in single units. They are constructed of angle and formed steel parts, welded together. Each rack automatically locks securely in position on the rack underneath.

**STACKBIN  
CORP.**



PROVIDENCE, R. I.

## NEW VERTICAL THREE SPEED FLEXIBLE SHAFT MACHINE

The N. A. Strand & Company, 5001 North Lincoln Street, Chicago, have added a new type three speed Vertical Machine to their line of flexible shaft machines. Although there are only three standard sizes of 1/6, 1/4 and 1/3 horsepower, larger sizes may also be obtained. Speed combinations of the above standard size machines are as follow: 1700, 3000 and 5200 R.P.M., or 3400, 6000 and 10,400 R.P.M.

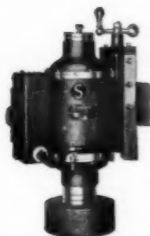
Each machine, besides being fully ball bearing, is mounted in a swivel bale and is provided with adjustable tie rods for suspending.



## THE L-W MAGNETIC CHUCK



The L-W Chuck Company of Toledo, Ohio, in announcing their new L-W Magnetic Chuck, claim it to be of unusual quality with a maximum magnetic holding power. It is guaranteed to be thoroughly waterproof for either dry or wet grinding as well as being guaranteed for a long, useful life. Its connections operate on either ordinary 110 volt or 220 volt direct current line. The working surface of this new magnetic chuck is 6½" wide by 18" long.



## STANDARD VERTICAL ANGLE PLATE GRINDER

For use on Planer, Boring Mill, etc.

Drawn Shell Motor. SKF Precision Ball Bearings, with special thrust bearing.

2, 3, 5, 7½ and 10 H. P. sizes, 1750 or 3400 R. P. M. For straight face or cup wheels.

Flat Pad (no feed), Vertical or Horizontal Feed, or both Feeds, as ordered.

## WRITE FOR COMPLETE CATALOG

*Illustrating:*

GRINDERS: Tool Post, Angle Plate, Tool, Die, Disc, Snagging, etc.  
¼ H. P. to 15 H. P.

BUFFERS & POLISHERS: Direct Driven and Adjustable Speed.  
¼ H. P. to 20 H. P.

DRILLS: Electric, Hand; also Portable Radial.

**The Standard Electrical Tool Co.**  
1952 West 8th St.,      *Estab. 1912*      Cincinnati, Ohio



## The UTILITY Bench and KEYSEATER Floor Type

This inexpensive, compact hand operated Keyseater is designed to cut keyways with accuracy at a rapid pace. Keyways cut from ½" to 2-¾" bore as standard; or if desired larger bores can be arranged; and 7' in length, either straight or taper.

### The Following Cutters Are Standard on THE UTILITY

With the ½" bar: ⅛" and ⅜" Cutters.  
With the ¾" bar: ⅜", ½", and ⅝" Cutters.  
With the 1" bar: ¼", ⅝", ¾", ⅞", and 1½" Cutters.  
Cutters also in thirty-second sizes.

*Write for Prices and General Information*

**SOUTH-SIDE MACHINE CO.**  
3761 Eiler Street      St. Louis, Mo.

## NEW EQUIPMENT TABLOIDS

**The manufacturers will be pleased to  
send full information upon request**

The Packer Machine Co., Meriden, Conn., has developed a new 14 wheel-head Continuous Polishing and Buffing machine. Work, either curved or flat surfaced, is carried under the wheels by a chain conveyor, which is operated intermittently by an indexing unit driven by a New Departure Transitory variable-speed unit of three horse-power rating. This machine is 42 feet long and has a total weight of about 6 tons.

---

Producto-Matic, a new machine built by the Producto Machine Co., Bridgeport, Conn., mills locating pads on automobile crankshafts preparatory to center turning their bearings on production lathes. A simplified transmission with pick-off gears provides for changing feeds and speeds. The estimated production of this machine is from 60 to 65 crankshafts a day.

---

The Udylite Company, Detroit, Mich., has developed a semi-automatic plating machine, in which each piece of work is subjected to identical plating conditions, such as plating time and current density. The machine can be set for plating work to various thicknesses.

---

The Madison-Kipp Corporation, Madison, Wis., has introduced a high production die-casting machine, "Model 7 Vertical." It is a special purpose equipment intended for the pressure die-casting of lead or zinc alloys when parts require inserts of other metals or materials. Ideally adaptable to the use of multiple cavity dies.

---

The Van Norman Machine Tool Co., Springfield, Mass., has recently developed a high-speed piston grinder, No. 101, which will turn and grind pistons of both the straight or cam type. Simplified operation and increased speed of this machine yields a high rate of output in a minimum amount of time.

# WISE

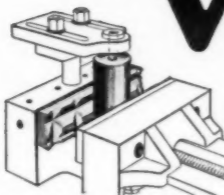


Fig. 3. V-Jaw for Round Work

All Vises are drilled  
and tapped to take  
our Standard JIG  
ATTACHMENTS

ANY VISE WILL PAY

*Send for Circulars*

**THE GRAHAM MFG. CO.**  
70 Willard Ave., PROVIDENCE, R. I.



Fig. 2  
Without Jig  
Attachments

---

## Motorize with Steege Drives

Equip Your Lathes, Shapers,  
Millers, etc., with



---

## Steege Drives

---

Easily  
Installed **\$40.<sup>00</sup> up**

*Write for Catalog*

**W. L. Steege Machinery Co.**  
20 S. Clinton St., Chicago

## **New Equipment Tabloids—Continued**

The Detroit Furnace Company of 826 Elizabeth St., Detroit, claim to have perfected a new furnace control which is now standard equipment on the company's new electric melting furnaces. Through a set of dials on the controls, the location of the furnace door and the rocking cycle can be easily pre-determined. There is also a set of controls which sets the rocking speed for the different alloys. As a result of this innovation in electric furnace controls, it is possible to make an exact duplication of previous successful melting cycles.

---

A specially designed Lift Truck for handling cable reels has been introduced by the Lewis-Shepard Company at 231 Walnut St., Watertown, Boston, Mass. Based upon the company's standard hydraulic mechanism and lift platform construction, it accommodates reels from 28" to 44" in width. The Lift Trucks are made in five sizes, with capacities from 2,500 pounds to 10,000 pounds with three lift heights. Complete information may be secured from the manufacturer.

---

The Michigan Tool Company at 7260 Six Mile Road, Detroit, Michigan, has just placed on the market a gear cutting machine for cutting internal gears by shaving. By means of a pot chuck which is fitted with adapters that can be varied it can accommodate a range of gear sizes. Full information will be sent by the manufacturer upon request.

---

All data that has been collected during the past five years concerning the properties and approved methods of fabricating Luken Nickel-Clad Steel has been gathered in a new booklet of twelve pages by the Lukens Steel Company of Coatesville, Pa.

---

A four-page folder extensively illustrated presents the line of cutting machines manufactured by DeWalt Products Corp., Lancaster, Pa. Included are DeWalt machines which cut both ferrous and non-ferrous metals with saw blades or abrasive wheels. The DeWalt band saw, joiner and mortiser are also featured.

---

## OLIVER of ADRIAN Die Making Machines

—save 50 to 60% of the labor on all sawing, filing and lapping operations. Saw to the die outline from advantageous starting points, thereby eliminating unnecessary sawing.

No saws to braze or special parts to buy.

Machines available for all classes of work in materials up to 3" thick and at a price within the reach of every shop.

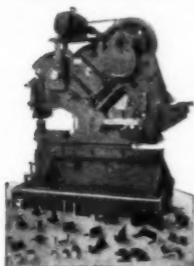


*Send for Oliver literature today; there is no obligation.*

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**OLIVER INSTRUMENT COMPANY**  
1408 Maumee St., ADRIAN, MICHIGAN

---



## PELS

**Combination  
Punch, Plate Shear, Angle,  
Bar and Tee Cutter**

**With Built-In Notcher and Coper**

*A complete fabricating shop in one small unit*

Indispensable for structural, architectural, ornamental iron work and general maintenance and repair work of industrial plants.

**CUTS** Plates of any length and width; Flats; Rounds and Squares; Angles and Tees square and on mitre; Perfect cuts obtained.

**PUNCHES** Plates and Structural Shapes in webs and flanges; Full Floating Punch Head.

**COPES and NOTCHES** angles, etc.

**Guaranteed Unbreakable Steel Plate Frame**

*Built in Eight Sizes*

**HENRY PELS & CO., Inc.** 90 West Street,  
New York, N.Y.

## New Equipment Tabloids—Continued

A cut-tooth worm-gear speed reducer of a wide range of ratios and capacities with either a single or double reduction, has been developed by the Link-Belt Co., 2045 W. Hunting Park Ave., Philadelphia, Pa.

---

A grinding wheel dresser impregnated with extra coarse diamonds, especially suitable for larger and harder grades of grinding wheels employed on surface, cylindrical, and centerless grinding machines, has been developed by the Carboly Co., Inc., 2987 E. Jefferson Ave., Detroit, Mich.

---

The Hisey-Wolf Machine Co., Cincinnati, Ohio, has recently introduced a portable motor-driven grinder for grinding the threads of worms. This equipment is available in one, three, and five horse-power sizes.

---

The Crown Rheostat & Supply Company of 1908 Maypole Ave., Chicago, have introduced a new Centrifugal Drying Machine for drying small parts. It has a steel plate bottom with welded side holding a 12" by 12" basket which is rotated by a  $\frac{3}{4}$  H.P. ball bearing motor mounted for vertical drive. The machine takes 33" by 30" floor space. Further information may be gained by addressing the manufacturer directly.

---

These controls can also be applied to existing furnaces built by the company in the 200 pound or larger sizes. For further information write the Detroit Furnace Company, 826 Elizabeth St., Detroit, Michigan.

---

The Sebastian Lathe Company of number one Culbert St., Cincinnati, Ohio, has perfected a motor driving unit for cone-head lathes. This unit can either be attached to the rear of any cone-head lathe or placed on the floor. The unit is available in any of the three sizes,  $\frac{1}{2}$  H.P., 1 H.P. or 2 H.P., revolving at 1200 R.P.M.

**HIGH  
SPEED  
DRILL  
PRESS**



Write  
for  
Literature

# TAPPING

**ATTACHMENT FOR  
BETTER TAPPING**

New tapping attachment taps holes perfectly at tremendous speed. Has friction drive and reverse with double-cone cork-faced clutch; ball bearings; balanced reversing mechanism. Simple to operate. Easy to maintain. Precision-made with all parts interchangeable. Three sizes. Many other styles for every need.

**PRO CUNIER  
SAFETY CHUCK CO.**

14 So. Clinton St.,

CHICAGO, ILL.



## Hartford Taper Gauge

**Locates Inaccuracies Instantly**

When turning tapers on end mills, profile cutters, twist drills, reamers, lathes, etc., accuracy is all important. The Hartford Taper Gauge enables the workman to tell instantly whether a taper is right.

**Simple—Inexpensive—Reliable**

Any inaccuracy down to .001" can be instantly detected. Adjustable over a wide range—from No. 0 to No. 14 taper.

*Write for Complete Details and Price*

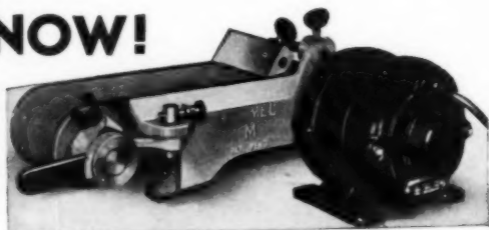
**We Also Build Machinery on a Contract Basis  
And Design and Develop Special  
Automatic Machinery**

**Gears and Cams Cut To Order**

**Hartford Special Machinery Co.**

285 Homestead Ave., Hartford, Conn.

# NOW!



*An Inexpensive*  
**ABRASIVE BAND GRINDER—**  
*"Built Like A Machine Tool"*

The Hormel-M Grinder is sturdily built with a supporting leg under the grinding table to eliminate vibration and tipping due to pressure on belt. Ball bearing throughout, equipped with Alemite lubrication, complete with grease gun. Write for illustrated folder on this and other styles and sizes.

**HORMEL-M GRINDER**  
**WALLS SALES CORP., 96 Warren St., New York, N. Y.**

## Gem Drill Press Vises

No. 1  
 Vise



Price  
**\$18.00**

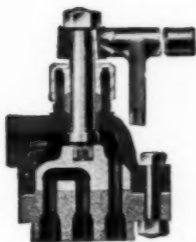
**Made of Malleable Iron.**  
**Tool steel jaws with "V" grooves and**  
**accurately ground.**

Length over all.....	12"	Depth of jaws.....	2"
Width.....	4½"	Jaws open.....	3½"
Height.....	4"	Weight.....	18 lbs.

**We also manufacture larger vises**

*Circular on request*

**J. E. Martin Tool & Die Works**  
 518 W. State St., Springfield, Ohio



## Two, Three and Fourway Valves

Foot Operated  
Lever Operated  
Also Solenoid Operated

It may be a simple matter to change a leather washer in an air valve to stop a bad leak, but it isn't the cost of the change that is important, it is the cost of the air lost during the weeks prior to the change. Further, this air loss and leather washer change in some makes of valves continues on year in and year out. Nicholson Valves are made of non-corrosive metals, are soap bubble tight, and remain so over periods as long as six years without maintenance of any kind.

*Sent on trial. Bulletins on request.*

**W. H. Nicholson & Company**  
117 Oregon Street, Wilkes-Barre, Pa.

## Let Your Losses Stop with the Broken Tap



Don't halt production and pay skilled mechanics to dig it out, often injuring the work.

### **A Handy Walton Tap Extractor**

Will forestall these unnecessary losses. Insert its flutes into the broken tap, twist the end—an apprentice can do it in a jiffy—and the tap backs out without injury to the threads.

Made in three and four flute styles.

*Let us send it to you for a sixty-day free trial*

**The Walton Company**  
95 Allyn St., Hartford, Conn.

## Something New In Flexible Couplings



For shafts  $\frac{1}{4}$ " to 3" Dia. Run absolutely quiet. Convex or flaring surface—two cushion construction assure years of trouble-free service. *Test it!* Ask for sample. Just send H. P., R. P. M. and Shaft Dia. Other types from  $\frac{1}{4}$ " to 10" bores. **WRITE**

**LOVEJOY TOOL WORKS**  
5026 W. Lake St., Chicago, Ill.

## Let Us Solve Your Brush Troubles

Motor and Generator Brushes  
Carbon—Graphite—Metal

A Grade for every need—Made to sample or specifications.

30 Day Trial to Reliable Users

24 Hour Emergency Service.



**Seager Carbon Company,** 102 Park Place,  
New York City

## Engineers, Designers and Welding Users AVOID COSTLY MISTAKES

*Find the Right Answer to  
All Welding Problems in the New*  
**Procedure Handbook of Arc  
Welding Design & Practice**

586 Pages. Over 700 Illustrations

• Procedure Handbook is the most valuable work of its kind ever published. Recognized everywhere as the authority on electric welding. Used by prominent engineering schools and thousands of industrial plants.

New edition contains complete and accurate data on all latest arc welding applications and design procedures—everything you need. *Order your copy now!*

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506 S. Dearborn Street  
CHICAGO, ILL.

• This New Handbook may save you thousands of dollars.

**ORDER YOUR COPY NOW**



• Printed on fine paper with semi-flexible binding of simulated leather, gold embossed; size 6 x 9 inches.



## SHEAR CUT Single and Double END MILLS

THEY shear cut the metal instead of the old way of cutting. They'll cut faster, also leave that smooth finish you want. Why? It is the way they are ground.

*Send for a new catalog showing other sizes and styles*

**PROGRESSIVE TOOL  
& CUTTER CO.**

**FERNDALE, MICHIGAN**

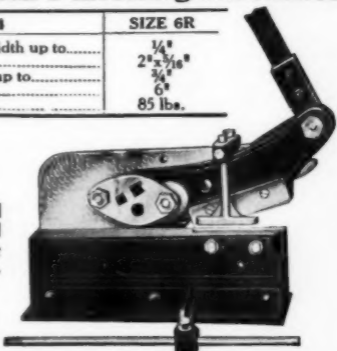
## Hand Power Forged Steel Shearing and Punching Machines

MODEL 4	SIZE 6R
Plates, any length or width up to.....	$\frac{1}{4}$ "
Flats, up to .....	$2\frac{1}{2} \times \frac{5}{16}$ "
Rounds and Squares, up to.....	$\frac{3}{4}$ "
Blades, .....	$\frac{1}{2}$ "
Weight, .....	85 lbs.

**Body,  
Drop Forged  
Throughout**

Complete line of hand and power operated shears, punches, bar cutters and bending machines.

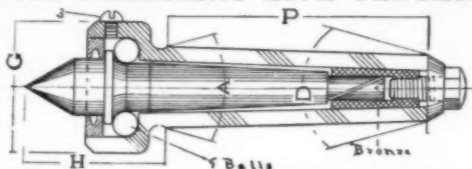
*Write for descriptive catalogue and prices*



**G. D. S. Shearing & Punching Machine Co.**  
101 Walker St., New York, N. Y.

## RIGID RESILIENT LIVE CENTER

D  
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G  
N



## RIGID TRIPLE-LIFE CENTER

G  
R  
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D  
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### IT OFFERS:

Long Life & Short Overhang

Short Life & Long Overhang

Saves  $\frac{1}{3}$  on initial tool;  $\frac{2}{3}$  on subsequent Inserts.

**Rigid Tool Holder Co., 12281 Turner Ave.  
Detroit, Michigan**

## DRILLING MACHINES

### SIZES

Stationary Head—14"-20"-31"

Sliding Head—24"-28"-31"-36"

These machines were formerly manufactured by the Rockford Machine Tool Company of Rockford, Illinois. Thousands of these machines have been installed and are giving universal satisfaction.

Also manufacturers of the Cleereman Automatically Oiled, Anti-Friction High Speed Drilling, Boring and Tapping Machines.

Builders of drilling equipment for over twenty years.

**CLEEREMAN MACHINE  
TOOL COMPANY**

**Green Bay, Wisconsin**

[ Formerly Green Bay Barker Machine & Tool Works ]



---

# WHITNEY TOOLS

---



## No. 455 COMPLETE ANGLE-IRON UNIT

Capacity  
2" x 2" x 1/4"  
angle iron  
Weight 225  
pounds.

### SPEED

Notches and  
Bends 2" x  
2" x 1/4" Angle  
Iron in One  
Minute Flat.



## BALL BEARING PUNCH No. 20

Capacity, 1/2" thru 1/2" iron.  
Weight, 20 lbs.  
Will Also Drive Rivets.

*Write for Catalog and Price List on Entire Line*

---

**WHITNEY METAL TOOL COMPANY**  
**95 FORBES ST.,** **ROCKFORD, ILL.**

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## RENU TOOL COMPANY

GRINDING SPECIALISTS

THE ONLY TOOL SALVAGE FIRM  
AUTHORIZED BY THE FACTORY  
TO SALVAGE

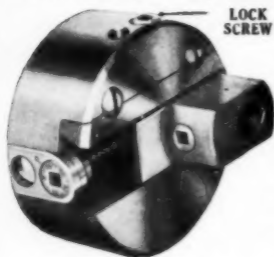
## WELDON END MILLS

RENU INTO NEW

YOUR OLD WORN OUT MILLING  
CUTTERS, SAWS, END MILLS  
DRILLS AND REAMERS

**6517 BRUSH ST.,** **DETROIT, MICH.**

## FLYNN MICROMETER OFFSET BORING HEADS



### No. 30

This dovetail designed head is particularly useful where a large offset is required. Body is solid steel, dovetailed hardened tool holder has  $2\frac{1}{2}$ " offset. Tension gib and locking device takes strain of micrometer screw. Dial graduated in thousandths, 50 thousandths to a turn, insuring accurate adjustment in boring. Bar capacity is  $\frac{1}{4}$ -. $\frac{3}{4}$ .

*Write for information on other styles and sizes*

**FLYNN MANUFACTURING CO.**

435 Bates St.,

Detroit, Mich.



## BURKE Milling Machine

This milling machine is designed to speed up and economize the milling of work too small to be profitably handled on larger millers.

It is one of a line of five millers that are fast, accurate and dependable.

Either ball or plain bearing spindles

No. 3 Hand Feed Milling Machine

*Write for Circulars*

**The Burke Machine Tool Co.,** 297 E. 16th St.,  
Conneaut, Ohio

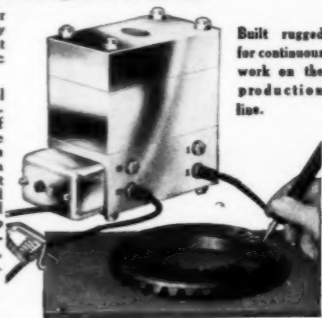
# For Light and Heavy Etching

**With 24 Stages of Control.**

The LUMA Master Etchtool fulfills every marking requirement that can be done by an electric Etching outfit.

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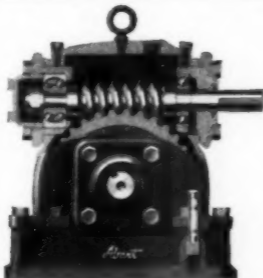
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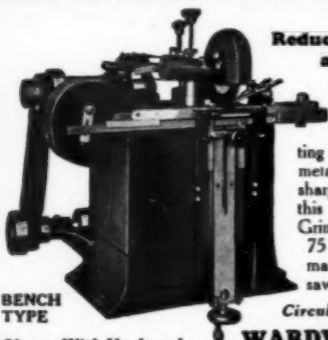
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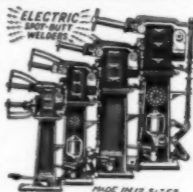
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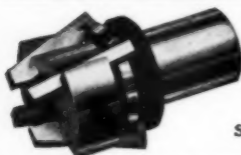
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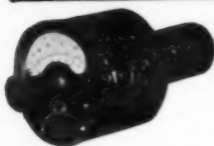
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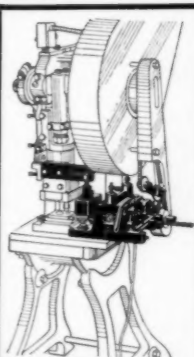
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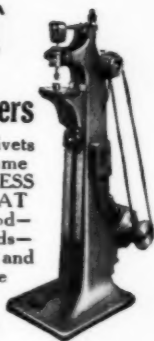


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Tannowitz Works, Grand Rapids, Mich.

## Arbor Presses

Atlas Press Co., Kalamazoo, Mich.  
Sheldon Machine Co., 3255 Cottage Grove Ave., Chicago, Ill.  
Wilson K. R., Buffalo, N. Y.

## Balancing Ways

Sundstrand Machine Tool Co., Rockford, Ill.

## Band Saw Blades for Metal

Saw and Knife Specialty Co., Cleveland, O.

## Band Saw Machines, for Metal

Armstrong-Bloom Mfg. Co., 341 N. Francisco Ave., Chicago  
Grob Brothers, West Allis, Wis.  
Tannowitz Works, Grand Rapids, Mich.  
Wells Mfg. Co., Three Rivers, Mich.

## Band Saw Machines, Wood

Delta Mfg. Co., Milwaukee, Wis.

## Bar Cutters

Buffalo Forge Company, Buffalo, N. Y.  
G. D. S. Shearing & Punching Machine Co., 101 Walker St., New York, N. Y.  
Pels & Co., Inc., Henry, 90 West St. New York City

## Belt Cutters

Flexible Steel Lacing Co., 4670 Lexington St., Chicago, Ill.

## Belt Lacing

Armstrong-Ray & Co., 315 N. Sheldon St., Chicago, Ill.  
Flexible Steel Lacing Co., 4670 Lexington St., Chicago, Ill.

## Belt Sanders

Skilaw, Inc., 2304 Elston Av., Chicago, Ill.

## Bench

Angle Steel Stool Co., Plainwell, Mich.

## Bench Lathes

Sheldon Machine Co., 3255 Cottage Grove Ave., Chicago, Ill.

## Bench Legs and Drawers

Angle Steel Stool Co., Plainwell, Mich.

## Bending Machines, Hand and Power

Armstrong-Bloom Mfg. Co., 341 N. Francisco Ave., Chicago  
Buffalo Forge Company, Buffalo, N. Y.  
G. D. S. Shearing & Punching Machine Co., 101 Walker St., New York, N. Y.  
Lowthwaite Mch. Co., T.H. 311 E. 47th., N. Y.

## Bins

Angle Steel Stool Co., Plainwell, Mich.  
Stackbin Corp., Providence, R. I.

## Blowers

Clements Mfg. Co., 6850 Naragansett, Chicago

## Blowers, Portable Electric

Clements Mfg. Co., 6850 Naragansett, Chicago  
Skilaw, Inc., 2304 Elston Av., Chicago, Ill.  
Standard Electrical Tool Co., Cincinnati, O.

## Bolt and Nut Machinery

Foots-Burt Co., Cleveland, O.

## Boring Bars

Chicago Tool & Engr. Co., 8380 So. Chicago Ave., Chicago, Ill.  
Maxwell & Co., F. A. Cleveland, Ohio.  
The Rigid Toolholder Co., Detroit, Mich.  
Russell Boring Bar Co., Middletown, Ohio

## Boring Heads

Flynn Manufacturing Co., Detroit, Mich.

## Boring Machines

Cleereman Mch. Tool Co., Green Bay, Wis.

## Broaches, Spline and Square

Taylor Machine Co., Cleveland, Ohio

## Brakes, Hand and Power

Fels & Co., Inc., Henry, 90 West St., New York City  
Dreis & Krump Mfg. Co., 7440 So. Loomis Blvd., Chicago, Ill.

## Brushes, Motor and Generator

Seager Carbon Co., 98 Park Place, New York City

## Buffers, Bench

Valley Electric Corp., St. Louis, Mo.

## Buffers, Pedestal

Valley Electric Corp., St. Louis, Mo.

## Burs, Steel

White Dental Mfg. Co., 10 E. 40th Street, New York, N. Y.

## Bushings, Steel

Acme Industrial Co., 419 N. Carpenter St., Chicago, Ill.  
Baumbach Mfg. Co., E. A., 1812 So. Kilbourne Ave., Chicago

## Bushings, Jig

Acme Industrial Co., 419 N. Carpenter St., Chicago, Ill.

## Cabinets

Angle Steel Stool Co., Plainwell, Mich.

## Centering Machines

Sundstrand Machine Tool Co., Rockford, Ill.  
Cullman Wheel Co., 1359 Altgeld St., Chgo.

## Centers, Lathe

Rigid Tool Holder Co., Detroit, Mich.

## Chains, Silent and Roller

Chicago Gear Works, 789 W. Jackson Blvd., Chicago  
Cullman Wheel Co., 1359 Altgeld St., Chgo.

## Chamfering Machines, Automatic

Grant Mfg. & Mch. Co., Bridgeport, Conn.

## Chucks

Heuser Mfg. Co., 1638 No. Paulina St., Chicago, Ill.

## Chucks, Automatic

Proconier Safety Chuck Co., 14 S. Clinton St., Chicago

## Chucks, Collet

Proconier Safety Chuck Co., 14 S. Clinton St., Chicago

## Chucks, Drill and Tap

Hartford Special Mch. Co., Hartford, Conn.  
Proconier Safety Chuck Co., 14 S. Clinton St., Chicago

## Chucks, Quick Change

Proconier Safety Chuck Co., 14 So. Clinton St., Chicago

## Chucks, Ring Wheel Grinder

Graham Manufacturing Co., Providence, R. I.

## Cold Saws

Burke Machine Tool Co., Concord, Ohio

## Classified Finding Index

**Collets for all Lathes and Millers**  
Harding Brothers, Inc., Elmira, N. Y.  
Sutton Tool Co., Detroit, Mich.

**Collets for Auto. and Hand Screw Machines**  
Sutton Tool Co., Detroit, Mich.

**Collet Tubes**  
Sutton Tool Co., Detroit, Mich.

**Contract Work Wanted**  
Burke Machine Tool Co., Connant, O.

**Couplings, Compression Shaft**  
W. H. Nicholson & Co., Wilkes-Barre, Pa.

**Couplings, Flexible**  
Delta Mfg. Co., Milwaukee, Wis.  
Lovejoy Tool Works, 5038 W. Lake St., Chgo.  
W. H. Nicholson & Co., Wilkes-Barre, Pa.

**Couplings, Shaft**  
Delta Mfg. Co., Milwaukee, Wis.  
W. H. Nicholson & Co., Wilkes-Barre, Pa.

**Cut-off Saws**  
Tannerwitz Works, Grand Rapids, Mich.

**Cutters**  
Progressive Tool & Cutter Co., Ferndale, Mich.

**Cutters, Belt**  
Flexible Steel Lacing Co., 4670 Lexington St., Chicago, Ill.

**Cutter Grinders, Universal**  
Geo. Gorton Machine Corp., Racine, Wis.

**Demagnetizers**  
Luma Electric Equipment Co., Toledo, Ohio

**Desks**  
Angle Steel Steel Co., Plainfield, Mich.

**Diamonds, Industrial & Rough**  
Mendes Cutting Factories, Inc., 505 Fifth Ave., New York City

**Diamond Pointed Tools**  
Mendes Cutting Factories, Inc., 505 Fifth Ave., New York City

**Dies, Blank and Forming**  
American Tool Works, Inc., Hartford, Conn.  
Hamilton Tool Company, Hamilton, Ohio

**Die Duplicating Machines**  
Geo. Gorton Machine Corp., Racine, Wis.

**Die Making Machines**  
Oliver Instrument Co., Adrian, Mich.

**Die Sets**  
Baumbach Mfg. Co., E. A., 1812 So. Kilbourne Ave., Chicago

**Die Sinking and Engraving Machines**  
Pratt & Whitney Co., Hartford, Conn.

**Dividing Heads**  
Wm. Carroll & Son, Norwood, Cincinnati, O.

**Dowel Pins, Steel**  
Acme Industrial Co., 419 N. Carpenter St., Chicago, Ill.  
Baumbach Mfg. Co., E. A., 1812 So. Kilbourne Ave., Chicago

**Drill Holders**  
Chicago Tool & Engr. Co., 3280 So. Chicago Ave., Chicago, Ill.

**Drills, Electric**  
SpeedWay Mfg. Co., 1822 So. 52nd Ave., Cicero, Ill.  
Skilaw, Inc., 3304 Elston Av., Chicago, Ill.

**Drill Jigs, Special**  
Heuser Mfg. Co., 1638 No. Paulina St., Chicago, Ill.

**Drill Jigs, Universal**  
Heuser Mfg. Co., 1638 No. Paulina St., Chicago, Ill.

**Drilling Attachments, High Speed**  
Graham Manufacturing Co., Providence, R. I.

**Drilling Machines, Bench**  
Atlas Press Co., Kalamazoo, Mich.  
Buffalo Forge Company, Buffalo, N. Y.  
Cleereman Mche. Tool Co., Green Bay, Wis.

**Drilling Machines, Boiler**  
Cincinnati-Bickford Tool Co., Cincinnati, O.

**Drilling Machines, Gang**  
Cincinnati-Bickford Tool Co., Cincinnati, O.  
Standard Electrical Tool Co., Cincinnati, O.

**Drilling Machines, Multiple Spindle**  
Cincinnati Bickford Tool Co., Cincinnati, O.  
Foots-Burt Co., Cleveland, O.

**Drilling Machines, Portable Electric**  
Skilaw, Inc., 3304 Elston Av., Chicago, Ill.  
SpeedWay Mfg. Co., 1822 So. 52nd Ave., Cicero, Ill.  
Strand Co., N. A., 5001 N. Lincoln St., Chicago  
White Dental Mfg. Co., 10 E. 40th Street, New York, N. Y.

**Drilling Machines, Radial**  
Cincinnati Bickford Tool Co., Cincinnati, O.

**Drilling Machines, Sensitive**  
Atlas Press Co., Kalamazoo, Mich.  
Buffalo Forge Company, Buffalo, N. Y.  
Burke Machine Tool Co., Connant, Oh  
Foots-Burt Co., Cleveland, O.

**Drilling Machines, Vertical**  
Atlas Press Co., Kalamazoo, Mich.  
Buffalo Forge Company, Buffalo, N. Y.  
Cincinnati Bickford Tool Co., Cincinnati, O.  
Foots-Burt Co., Cleveland, O.

**Drives, Lathe**  
Cullman Wheel Co., 1359 Altgeld St., Chgo.  
Harding Brothers, Inc., Elmira, N. Y.

**Electric Blowers**  
Clements Mfg. Co., 6550 Narragansett Ching

**Electrical Instruments**  
Illinois Testing Laboratories, Inc., 150 W. Austin Ave., Chicago

**Elevating Tables**  
Hamilton Tool Company, Hamilton, Ohio

**Emery Wheel Dressers and Cutters**  
Western Tool & Mfg. Co., Springfield, O.

**Emery Wheel Dressers, Diamond**  
Mendes Cutting Factories, Inc., 505 Fifth Ave., New York City

**End Mills**  
Progressive Tool & Cutter Co., Ferndale, Mich.

**Engraving Machines**  
Geo. Gorton Machine Co., Racine, Wis.

**Etching Machines, Electric**  
Luma Electric Equipment Co., Toledo, Ohio

**Experimental Work**  
American Tool Works, Inc., Hartford, Conn.

**Fasteners, Belt**  
Flexible Steel Lacing Co., 4670 Lexington St., Chicago, Ill.

**Feeder Tubes**  
Sutton Tool Co., Detroit, Mich.

# Classified Finding Index

**Feed Fingers for Auto. Screw Mchs.**  
Sutton Tool Co., Detroit, Mich.

**Files**  
Saw & Knife Specialty Co., Cleveland, Ohio

**Files, Rotary**  
White Dental Mfg. Co., 10 E. 40th Street,  
New York, N. Y.

**Filing Machines**  
Grob Brothers, West Allis, Wis.  
Oliver Instrument Co., Adrian, Mich.

**Filing Room Equipment**  
Wardwell Manufacturing Co., Cleveland, O.

**Flexible Shaft Machinery**  
Pratt & Whitney Co., Hartford, Conn.

**Furniture, Machine Shop**  
Western Tool & Mfg. Co., Springfield, O.

**Gages, Pin, Plug, Ring and Snap**  
American Tool Works, Inc., Hartford, Conn.

**Gages, Taper**  
Hartford Special Mch. Co., Hartford, Conn.

**Gears**  
Abart Gear & Machine Co., Cleora, Ill.  
Chicago Gear Works, 769 W. Jackson Blvd.,  
Chicago  
Massachusetts Gear & Tool Co., Woburn,  
Mass.

**Ohio Gear Co., Cleveland, Ohio**  
Taylor Machine Co., Cleveland, Ohio

**Generators**  
Chicago Electric Co., 1338 W. 22nd St.,  
Chicago, Ill.

**Grinders, Bench**  
Baldor Electric Co., St. Louis, Mo.

**Grinders, Pedestal**  
Baldor Electric Co., St. Louis, Mo.

**Grinder, Electric**  
Chicago Wheel & Mfg. Co., M. C. Tool Div.,  
116 S. Aberdeen St., Chicago, Ill.  
Skillsaw, Inc., 3304 Elston Av., Chicago, Ill.

**Grinder, Flexible Shaft**  
Mall Tool Co., 7742 S. Chicago Ave., Chicago  
N. A. Strand & Co., 5001 N. Lincoln, Chgo.

**Grinder, Hand**  
Chicago Wheel & Mfg. Co., M. C. Tool Div.,  
116 S. Aberdeen St., Chicago, Ill.  
Skillsaw, Inc., 3304 Elston Av., Chicago, Ill.

**Grinder, High Speed**  
Chicago Wheel & Mfg. Co., M. C. Tool Div.,  
116 S. Aberdeen St., Chicago, Ill.  
Mall Tool Co., 7742 S. Chicago Ave., Chicago

**Grinders, Electric Bench**  
Baldor Electric Co., St. Louis, Mo.  
Delta Mfg. Co., Milwaukee, Wis.  
Valley Electric Corp., St. Louis, Mo.

**Grinders, Pedestal Electric**  
Delta Mfg. Co., Milwaukee, Wis.  
Valley Electric Corp., St. Louis, Mo.

**Grinding Attachments, Drill**  
Carlson Mfg. Co., C. H., Minneapolis, Minn.  
Oliver Instrument Co., Adrian, Mich.

**Grinding Machines, Belt**  
Gallmeyer & Livingston Co., Grand Rapids,  
Mich.  
Production Machine Co., Greenfield, Mass.  
Standard Electrical Tool Co., Cincinnati, O.  
Wells Sales Corp., 96 Warren St., New York

**Grinding Machines, Cutter, Reamer and Tool**  
Gallmeyer & Livingston Co., Grand Rapids,  
Mich.  
Oliver Instrument Co., Adrian, Mich.

**Grinding Machines, External**  
Maxwell & Co., F. A., Cleveland, Ohio  
Chicago Tool & Engr. Co., 8380 So. Chicago  
Ave., Chicago, Ill.

**Grinding Machines, Floor**  
Standard Electrical Tool Co., Cincinnati, O.

**Grinding Machines, Internal**  
Maxwell & Co., F. A., Cleveland, Ohio  
Standard Electrical Tool Co., Cincinnati, O.

**Grinding Machines, Portable Electric**  
Chicago Tool & Engr. Co., 8380 So. Chicago  
Ave., Chicago, Ill.  
Chicago Wheel & Mfg. Co., M. C. Tool Div.,  
116 S. Aberdeen St., Chicago, Ill.  
R. G. Hawkins Co., 4654 W. Fulton, Chicago  
Mall Tool Co., 7742 S. Chicago Ave., Chicago  
Pratt & Whitney Co., Hartford, Conn.  
Standard Electrical Tool Co., Cincinnati, O.  
Strand Co., N. A., 5001 N. Lincoln St., Chgo  
White Dental Mfg. Co., 10 E. 40th Street,  
New York, N. Y.

**Grinding Machines, Pulley Finishing**  
Graham Manufacturing Co., Providence, R. I.

**Grinding Machines, Ring Wheel**  
Graham Manufacturing Co., Providence, R. I.

**Grinding Machines, Universal**  
Gallmeyer & Livingston Co., Grand Rapids,  
Mich.

**Grinding Wheels**  
Chicago Wheel & Mfg. Co., M. C. Tool Div.,  
116 S. Aberdeen St., Chicago, Ill.

**Grinding Wheel Dressers, Diamond**  
Mendes Cutting Facilities, Inc., 505 Fifth  
Ave., New York City

**Grinding Wheels, Mounted**  
Chicago Wheel & Mfg. Co., M. C. Tool Div.,  
116 S. Aberdeen St., Chicago, Ill.

**Grinding Wheels On Shafts**  
Chicago Wheel & Mfg. Co., M. C. Tool Div.,  
116 S. Aberdeen St., Chicago, Ill.

**Hack Saw Blades**  
Armstrong-Blum Mfg. Co., 841 N. Francisco  
Ave., Chicago

**Hack Saw Machines**  
Armstrong-Blum Mfg. Co., 841 N. Francisco  
Ave., Chicago

**Hammers, Mallets and Malls**  
Chicago Hawhide Mfg. Co., 1200 Elston Av.,  
Chicago, Ill.

**Hand Saws, Portable Electric**  
Skillsaw, Inc., 3304 Elston Av., Chicago, Ill.

**Hand Screw Machines, Precision**  
Bench Type  
Hardinge Brothers, Inc., Elmira, N. Y.

**Heads, Boring**  
Flynn Manufacturing Co., Detroit, Mich.

**Hollow Adjustable Mills**  
Genesee Mfg. Co., Rochester, N. Y.  
Kutmore Tool Co., Rochester, N. Y.

**Index Centers**  
Wm. Carroll & Son, Norwood, Cincinnati, O.

**Jigs and Fixtures**  
American Tool Works, Inc., Hartford, Conn.  
Hamilton Tool Company, Hamilton, Ohio  
Hartford Special Mch. Co., Hartford, Conn.

**Keyseaters, Bench**  
South Side Machine Co., St. Louis, Mo.

**Keyseaters, Floor**  
South Side Machine Co., St. Louis, Mo.

**Keyway Cutters**  
Threadwell Tap & Die Co., Greenfield, Mass.

## Classified Finding Index

- Knurls and Holders, for Turrets**  
Graham Manufacturing Co., Providence, R. I.
- Lacing, Belt**  
Flexible Steel Lacing Co., 4670 Lexington St., Chicago, Ill.
- Lamp Guards**  
Flexible Steel Lacing Co., 4670 Lexington St., Chicago, Ill.
- Lapping Compound**  
Timesaver Products Co., 88 So. Desplaines St., Chicago
- Lathe Centers**  
Rigid Tool Holder Co., Detroit, Mich.
- Lathe Chip Pans**  
Angle Steel Stool Co., Plainwell, Mich.
- Lathe Drives**  
Cullman Wheel Co., 1359 Altgeld St., Chgo.  
Hardings Brothers, Inc., Elmira, N. Y.
- Lathes, Bench**  
Atlas Press Co., Kalamazoo, Mich.  
Sheldon Machine Co., 3255 Cottage Grove Ave., Chicago, Ill.  
South Bend Lathe Works, South Bend, Ind.
- Lathes, Back Geared**  
South Bend Lathe Works, South Bend, Ind.
- Lathes, Brake Drum**  
South Bend Lathe Works, South Bend, Ind.
- Lathes, Engine**  
South Bend Lathe Works, South Bend, Ind.
- Lathes, Gap Head**  
South Bend Lathe Works, South Bend, Ind.
- Lathes, Manufacturing**  
Sundstrand Machine Tool Co., Rockford, Ill.
- Lathes, Precision Bench**  
Hardings Brothers, Inc., Elmira, N. Y.  
Wade Tool Co., Waltham, Mass.
- Lathes, Precision Bench Screw Cutting**  
Hardings Brothers, Inc., Elmira, N. Y.
- Lathes, Screw Cutting**  
South Bend Lathe Works, South Bend, Ind.
- Lathes, Wood Turning**  
Delta Mfg. Co., Milwaukee, Wis.
- Leader Pins, Steel**  
Acme Industrial Co., 419 N. Carpenter St., Chicago, Ill.
- Leather Belting, All Types**  
Chicago Rawhide Mfg. Co., 1200 Elston Av., Chicago, Ill.
- Leather Oil Retainers**  
Chicago Rawhide Mfg. Co., 1200 Elston Av., Chicago, Ill.
- Leather Pkg., Hydraulic & Pneumatic**  
Chicago Rawhide Mfg. Co., 1200 Elston Av., Chicago, Ill.
- Lubricator, Automatic**  
Norgren Co., C. A., Denver, Colo.
- Machine Knives**  
Saw & Knife Specialty Co., Cleveland, Ohio
- Machine Shop Lights**  
Chicago Die Casting Mfg. Co., 2502 West Monroe, Chicago, Ill.
- Machine Tender Stands**  
Angle Steel Stool Co., Plainwell, Mich.
- Mandrels, Expanding**  
W. H. Nicholson & Co., Wilkes-Barre, Pa.  
Western Tool & Mfg. Co., Springfield, O.
- Micrometers**  
Bradley Machinery Co., Detroit, Mich.
- Milling Attachments**  
Burke Machine Tool Co., Cincinnati, Ohio  
Wm. Carroll & Son, Norwood, Cincinnati, O.
- Milling Machines, Bench**  
Burke Machine Tool Co., Cincinnati, Ohio  
Sundstrand Machine Tool Co., Rockford, Ill.
- Milling Machines, Precision Bench**  
Hardings Brothers, Inc., Elmira, N. Y.
- Milling Machines, Hand**  
Burke Machine Tool Co., Cincinnati, Ohio  
Sundstrand Machine Tool Co., Rockford, Ill.
- Milling Machines, Plain**  
Burke Machine Tool Co., Cincinnati, Ohio  
Sundstrand Machine Tool Co., Rockford, Ill.
- Milling Machines, Universal**  
Geo. Gerton Machine Co., Racine, Wis.
- Milling Machines, Vertical**  
Geo. Gerton Machine Co., Racine, Wis.
- Mills, Adjustable Hollow**  
Genesee Mfg. Co., Rochester, N. Y.
- Motors**  
Chicago Electric Co., 1338 W. 22nd St., Chicago, Ill.
- Motor-Generator Sets**  
Chicago Electric Co., 1338 W. 22nd St., Chicago, Ill.
- Motor Drives, Universal**  
Cullman Wheel Co., 1359 Altgeld St., Chgo.  
Steege Mch. Co., 18 S. Clinton St., Chgo.
- Motors, Electric Ball Bearing**  
Valley Electric Corp., St. Louis, Mo.
- Moulds & Ladles, Hammer and Vise**  
Johnston Tool Co., East Providence, R. I.
- Numbering Machines**  
Numeral Stamp & Tool Co., Staten Island, N. Y.
- Packing, Hydraulic**  
Chicago Rawhide Mfg. Co., 1200 Elston Av., Chicago, Ill.
- Pigeon Hole Sections**  
Angle Steel Stool Co., Plainwell, Mich.

# Classified Finding Index

## Pins and Lacing for Belting

Chicago Rawhide Mfg. Co., 1200 Elston Ave., Chicago, Ill.

## Pins, Leader And Dowel

Acme Industrial Co., 419 N. Carpenter St., Chicago, Ill.  
Baumhach Mfg. Co., E. A., 1812 So. Kilbourne Ave., Chicago

## Pipe Cutters

Ridge Tool Co., Elyria, Ohio

## Pipe Vises

Ridge Tool Co., Elyria, Ohio

## Pipe Wrenches

Ridge Tool Co., Elyria, Ohio

## Planing Machines

Ryerson & Son, Inc., Joseph T., 16th and Rockwell Sts., Chicago

## Point Thinning Machines

Oliver Instrument Co., Adrian, Mich.

## Press Brakes

Dreis & Krump Mfg. Co., 7440 Loomis Blvd., Chicago, Ill.  
Pels & Co., Inc., Henry, 90 West St., New York City

## Presses, Arbor

Atlas Press Co., Kalamazoo, Mich.  
W. H. Nicholson & Co., Wilkes-Barre, Pa.  
Sheldon Machine Co., 3256 Cottage Grove Ave., Chicago, Ill.  
Wilson, R. K., Buffalo, N. Y.

## Presses, Power

Dreis & Krump Mfg. Co., 7440 Loomis Blvd., Chicago, Ill.  
Pels & Co., Inc., Henry, 90 West St., New York City

## Presses, Punch

Dreis & Krump Mfg. Co., 7440 Loomis Blvd., Chicago, Ill.  
Lewthwaite Mchs. Co., T. H., 811 E. 47th., N. Y.  
Pels & Co., Inc., Henry, 90 West St., New York City

## Production Tools

Genesee Mfg. Co., Rochester, N. Y.

## Profiling Machines

Ge. Gorton Machine Co., Racine, Wis.

## Pullers, Gear and Wheel

Armstrong-Blum & Co., 315 N. Sheldon St., Chicago, Ill.

## Punch Press Feeds

Wittak Mfg. Co., 4809 W. 24th Place, Chgo.

## Punch, Shear and Bender, Hand

Armstrong-Blum Mfg. Co., 341 N. Francisco Ave., Chicago

## Punches, Hand

Armstrong-Blum Mfg. Co., 341 N. Francisco Ave., Chicago  
Buffalo Forge Company, Buffalo, N. Y.  
Lewthwaite Mchs. Co., T. H., 811 E. 47th., New York  
Pels & Co., Inc., Henry, 90 West St., New York City  
Whitney Metal Tool Co., Rockford, Ill.

## Punches and Dies

Lewthwaite Mchs. Co., T. H., 811 E. 47th., N. Y.

## Punches and Shears

G. D. S. Shearing & Punching Machine Co., 101 Walker St., New York, N. Y.

## Pyrometers

Illinois Testing Laboratories, Inc., 180 W. Austin Ave., Chicago  
Pyrometer Instrument Co., 102-105 Lafayette St., New York City

## Pyrometers, Optical

Pyrometer Instrument Co., 102-105 Lafayette St., New York City

## Pyrometers, Portable & Stationary

Illinois Testing Laboratories, Inc., 180 W. Austin Ave., Chicago, Ill.

## Pyrometers, Surface

Pyrometer Instrument Co., 102-105 Lafayette St., New York City

## Racks, Cut

Massachusetts Gear & Tool Co., Woburn, Mass.

## Reamer Holders

W. H. Nicholson & Co., Wilkes-Barre, Pa.

## Riveters, Multiple Spindle

Grant Mfg. & Mchs. Co., Bridgeport, Conn.

## Riveters, Pneumatic

Grant Mfg. & Mchs. Co., Bridgeport, Conn.

## Riveting Machines

Grant Mfg. & Mchs. Co., Bridgeport, Conn.

## Rad Cutters

Armstrong-Blum Mfg. Co., 341 N. Francisco Ave., Chicago  
Lewthwaite Mchs. Co., T. H., 811 E. 47th., N. Y.  
Mele Company, East Haven, Conn.

## Saws, Band and Circular for Metal

Saw & Knife Specialty Co., Cleveland, Ohio

## Saws, Electric Hand

Delta Mfg. Co., Milwaukee, Wis.

## Saw Sharpening Machines

Wardwell Manufacturing Co., Cleveland, O.

## Shafts, Flexible

R. G. Hawkins Co., 4654 W. Fulton, Chicago  
Frat & Whitney Co., Hartford, Conn.  
Strand Co., N. A., 8001 N. Lincoln St., Chgo.  
White Denial Mfg. Co., 10 E. 40th Street, New York, N. Y.

## Shafts, Hangers and Boxes

Delta Mfg. Co., Milwaukee, Wis.

## Shafts, Steel

Delta Mfg. Co., Milwaukee, Wis.

## Shaping Machines

Osborne & Sexton Machy. Co., Colum

## Shear Blades

Saw & Knife Specialty Co., Cleveland, Ohio

## Shears, Bench

Mele Company, East Haven, Conn.

# Classified Finding Index

## Shears, Hand

Armstrong-Bloom Mfg. Co. 841 N. Francisco  
Av., Chicago  
Beverly Throatless Shear Co., 3007 W.  
110th Place, Chicago, Ill.  
G. D. S. Shearing & Punching Machine Co.,  
101 Walker St., New York, N. Y.  
Lewthwaite Machine Co., T. H., 811 E. 47th  
St., New York  
Male Company, East Haven, Conn.  
Pels & Co., Inc., Henry, 90 West St., New  
York City  
Whitney Metal Tool Co., Rockford, Ill.

## Shear, Power

Dreis & Krump Mfg. Co., 7440 Loomis  
Bld., Chicago, Ill.  
G. D. S. Shearing & Punching Machine Co.,  
101 Walker St., New York, N. Y.  
Pels & Co., Inc., Henry, 90 West St., New  
York City

## Shears, Slitting

Beverly Throatless Shear Co., 3007 W.  
110th Place, Chicago, Ill.  
Dreis & Krump Mfg. Co., 7440 Loomis  
Bld., Chicago, Ill.

## Shears, Throatless

Beverly Throatless Shear Co., 3007 W.  
110th Place, Chicago, Ill.

## Shear & Rod Cutter, Bench

Male Company, East Haven, Conn.

## Shop Accessories

Delta Mfg., Co., Milwaukee, Wis.

## Shop Spotlights

Chicago Die Casting Mfg. Co., 2502 West  
Monroe, Chicago, Ill.

## Special Tools and Machinery

American Tool Works, Inc., Hartford, Conn.  
Wade Tool Co., Waltham, Mass.

## Speed Reducers

Abart Gear & Machine Co., Cleveo, Ill.  
Chicago Gear Works, 700 W. Jackson Blvd.,  
Chicago  
Cullman Wheel Co., 1359 Altgeld St., Chgo.  
Ohio Gear Co., Cleveland, Ohio

## Spools & Nuts for Auto. Screw Mchs.

Sutton Tool Co., Detroit, Mich.

## Spot Welding Machines, Speed.

Kaiser Engineering Co., Inc., Newark, N. J.  
Taylor-Winfield Corp., Warren, Ohio

## Sprockets

Chicago Gear Works, 700 W. Jackson Blvd.,  
Chicago  
Cullman Wheel Co., 1359 Altgeld St., Chgo.  
Massachusetts Gear & Tool Co., Woburn,  
Mass.  
Ohio Gear Co., Cleveland, Ohio

## Stampings

Gerding Brothers, Cincinnati, Ohio

## Stools and Chairs

Angle Steel Stool Co., Plainwell, Mich.

## Straightening Machines

Whitney Metal Tool Co., Rockford, Ill.

## Tables

Angle Steel Stool Co., Plainwell, Mich.

## Tap Extractors

Walton Co., Hartford, Conn.

## Tap Holders

Proconer Safety Chuck Co., 14 S. Clinton  
St., Chicago, Ill.

## Tapping Attachments

Proconer Safety Chuck Co., 14 S. Clinton  
St., Chicago, Ill.

## Tapping Jigs, Universal

Heuser Mfg. Co., 1638 No. Paulina St.,  
Chicago, Ill.

## Tapping Machines and Attachments

Burke Machine Tool Co., Conneaut, Ohio  
Cleereman Mchs. Tool Co., Green Bay, Wis.  
Proconer Safety Chuck Co., 14 So. Clinton  
St., Chicago, Ill.  
Whitney Metal Tool Co., Rockford, Ill.

## Thermometers, Resistance Type

Illinois Testing Laboratories, Inc., 150 West  
Austin Ave., Chicago, Ill.

## Threading Machines, Automatic, Stud

Grant Mfg. & Mchs. Co. Bridgeport, Conn.

## Threading Tools

Armstrong Bros. Tool Co., 808 N. Francisco  
Av., Chicago  
Ridge Tool Co., Wyria, Ohio.

## Tool Holders

Armstrong Bros. Tool Co., 808 N. Francisco  
Av., Chicago  
Rigid Toolholder Co., Detroit, Mich.  
Western Tool & Mfg. Co., Springfield, O.

## Tool Salvage

Renu Tool Co., Detroit, Mich.

## Tools, Abrasive

White Dental Mfg. Co., 10 E. 40th Street,  
New York, N. Y.

## Tools, Boring

Armstrong Bros. Tool Co., 808 N. Francisco  
Av., Chicago

## Tools, Lathes and Planers

Armstrong Bros. Tool Co., 808 N. Francisco  
Av., Chicago

## Tools, Machinists'

Armstrong Bros. Tool Co., 808 N. Francisco  
Av., Chicago

## Tube Flanging Machines

Grant Mfg. & Mchs. Co., Bridgeport, Conn.

## Trucks

Angle Steel Stool Co., Plainwell, Mich.

## Universal Drill Jigs

Heuser Mfg. Co., 1638 No. Paulina St.,  
Chicago, Ill.

## Universal Joints

American Tool Works, Inc., Hartford, Conn.  
Chicago Gear Works, 700 W. Jackson Blvd.,  
Chicago

# Classified Finding Index

## Used and Rebuilt Machinery

Alamo Engine Co., Hillsdale, Mich.  
 American Machinery Co., Cleveland, Ohio  
 Atlas Equipment Co., 114 S. Clinton, Chgo.  
 Belyea Co., Inc., 150 W. 18th St., New York, N. Y.  
 Bleser Mfg. & Mch. Co., Springfield, Ill.  
 Brotherhead & Son, Percy M., 114 Liberty St., New York, N. Y.  
 Brown Machinery Co., St. Louis, Mo.  
 Brownell Machinery Co., Providence, R. I.  
 Cincinnati Mch. & Supply Co., Cincinnati, O.  
 Clinton Mch. Co., 33 S. Clinton St., Chgo.  
 Consolidated Used Machinery Mart, 440 N. Oakley Blvd., Chicago, Ill.  
 Craig, Jr., Thomas H. Bridgeport, Conn.  
 Davis Machinery Co., Toledo, Ohio.  
 Detroit Manufacturers Supply Co., Detroit  
 Eastern Machinery Co., Cincinnati, O.  
 Emsman, Louis E. & Co., 1761 Elston Ave., Chicago, Ill.  
 Esley Machinery Co., E. L., 825 Hess St., Chicago, Ill.  
 Ford Machinery Sales Co., Ford City, Pa.  
 George, James W., Detroit, Mich.  
 Goldman, Harvey H., Detroit, Mich.  
 Herben Machinery Equipment Co., 20 S. Clinton St., Chicago, Ill.  
 Hill, Clarke & Co., 645 W. Washington Blvd., Chicago, Ill.  
 Howarth Mch. Co., C. C., Detroit, Mich.  
 Ideal Machinery Co., Plainwell, Conn.  
 Imperial Metal Products Co., Grand Rapids, Mich.  
 Indianapolis Machinery & Supply Company, Indianapolis, Ind.  
 International Machinery Co., Detroit, Mich.  
 Interstate Mch. Co., 130 S. Clinton, Chgo.  
 Iroquois Machinery Co., Buffalo, N. Y.  
 Johnson & Sons Machinery Co., Wm. C., St. Louis, Mo.  
 Jones Machine Tool Co., Cincinnati, Ohio  
 Kennard-Rafkin Mch. Corp., 160 Liberty St., New York, N. Y.  
 Klauber Mch. Co., E. L., St. Louis, Mo.  
 Lake Machinery Co., 664 W. Lake St., Chicago, Ill.  
 Long Machinery Corporation, Boston, Mass.  
 McDonald Machinery Co., St. Louis  
 McGill Machine Co., Hinghamton, N. Y.  
 Marr-Galbreath Mch. Co., Pittsburgh, Pa.  
 Meyer Blower Co., 1045 Washington St., Chicago, Ill.  
 Midwest Equipment Co., 623 W. Lake St., Chicago, Ill.  
 Miles Machinery Co., Saginaw, W. S., Mich.  
 Moller Machinery Co., Chas. L., 120-124 S. Clinton St., Chicago  
 Morey & Co., 45 Mill St., Astoria, Long Island, N. Y.  
 Morris Machinery Co., Newark, N. J.  
 Norton-Broadway Machinery Co., Cincinnati, Ohio  
 O'Brien Machinery Co., Philadelphia  
 Ohio Gear Co., The, Cleveland, O.  
 Ohio Mch. & Supply Co., Cincinnati, Ohio  
 Ott Machinery Sales Co., Detroit, Mich.  
 Osborne & Sexton Mch. Co., Columbus, O.  
 Pattison Supply Co., W. M., Cleveland, O.  
 Reliance Machinery Sales Co., Pittsburgh, Pa.  
 Reynolds & Son, Geo. T., Providence, R. I.  
 Ritterbush & Co., Inc., 30 Church Street, New York City  
 Riverside Machinery Depot, Detroit, Mich.  
 Rosenkrantz & Weinbecker, 2309 A Singer Bldg., New York City  
 Russell Machine Co., Pittsburgh, Pa.  
 Scott-Banbach Mch. Co., 4607 W. 20th St., Chicago  
 Scully Jones & Co., 1301 S. Beckwell St., Chicago, Ill.  
 Segal Machinery Co., 809 W. Lake St., Chicago, Ill.  
 Sharpsville Beller Works, Sharpsville, Pa.  
 Simmons Machine Tool Corp., Albany, N. Y.  
 Steege Mch. Co., 18 S. Clinton St., Chgo.  
 Stockman, John A., Honesdale, Pa.  
 Strong, Carlisle & Hammond Co., Cleveland  
 Sun Machinery Co., 28 Van Huren Street, Newark, N. J.  
 Surplus Material & Mch. Co., Detroit, Mich.

## Used and Rebuilt Machinery—Cont.

Surplus Stock & Mch. Co., 1153 W. Lake St., Chicago  
 Thompson, B. A., Fort Wayne, Ind.  
 United Mch. & Supply Co., St. Louis, Mo.  
 Victor Machinery Co., 128 S. Clinton Street, Chicago, Ill.  
 Victor Machinery Exchange, 251 Center St., New York City  
 Waters Mch. Co., C. H., Elkhart, Ind.  
 Weber, H. J., Riverside, Ill.  
 West Penn Machinery Co., Pittsburgh, Pa.  
 White Mch. Co., A. D., 108 N. Jefferson St., Chicago  
 Wiener Mch. Co., Inc., 237 Centre St., New York City  
 Wigglesworth Mch. Co., Cambridge, Mass.  
 Weinick Machinery Sales, 21st & Marshall Blvd., Chicago, Ill.  
 Zeeve, Alex, Woolworth, Bldg., N. Y. C.  
**Valves, Feet, Lever & Solenoid**  
 Nicholson & Co., W. H., Wilkes-Barre, Pa.  
**Vises, Drilling Machine**  
 Armstrong-Hum Mfg. Co., 341 N. Francisco Ave., Chicago  
 Armstrong Bros. Tool Co., 308 N. Francisco Ave., Chicago  
 Graham Manufacturing Co., Providence, R. I.  
 Heuser Mfg. Co., 1638 No. Paulina St., Chicago, Ill.  
 L-W Chuck Co., Toledo, Ohio  
 Martin Tool & Die Works, J. E., Springfield, O.  
 Sampson Tool Co., Inc., 101 Walker St., New York, N. Y.  
 Sheldon Machine Co., 3255 Cottage Grove Ave., Chicago, Ill.  
**Vises, Drill**  
 Johnson Tool Co., East Providence, R. I.  
**Vises, Machinists'**  
 Chicago Tool & Engr. Co., 3380 So. Chicago Ave., Chicago, Ill.  
 L-W Chuck Co., Toledo, Ohio  
 Sheldon Machine Co., 3255 Cottage Grove Ave., Chicago, Ill.  
 Western Tool & Mfg. Co., Springfield, O.  
**Vises, Milling Machine**  
 Graham Manufacturing Co., Providence, R. I.  
 Hartford Special Mch. Co., Hartford, Conn.  
 L-W Chuck Co., Toledo, Ohio  
 Sheldon Machine Co., 3255 Cottage Grove Ave., Chicago, Ill.  
**Vises, Shaper**  
 Graham Manufacturing Co., Providence, R. I.  
 L-W Chuck Co., Toledo, Ohio  
**Waste Cans**  
 Angie Steel Stool Co., Plainwell, Mich.  
**Welding Machines, Electric Spot**  
 Elster Engineering Co., Inc., Newark, N. J.  
**Welding Machines, Resistance**  
 Elster Engineering Co., Inc., Newark, N. J.  
**Wheel Dressing Diamonds**  
 Mendes Cutting Factories, Inc., 505 Fifth Ave., New York City  
**Wheel Pullers**  
 Armstrong-Bray & Co., 315 N. Sheldon St., Chicago, Ill.  
**Wheels, Grinding**  
 Chicago Wheel & Mfg. Co., M. C. Tool Div., 116 S. Aberdeen St., Chicago, Ill.  
**Woodworking Machinery**  
 Tannewitz Works, Grand Rapids, Mich.  
**Wrenches, Ratchet**  
 Lowell Wrench Co., Worcester, Mass.  
**Wrenches, Socket**  
 Lowell Wrench Co., Worcester, Mass.

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If you will list below the new or used metal-working machines or machine shop equipment for which you are in the market, and mail it to us, we shall be glad to broadcast it to all of our advertisers. Replies will come from them, not from us.

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## Used and Rebuilt Machinery Section

Lists of Used and Rebuilt Machinery, either For Sale, Wanted, or For Exchange, set in uniform style, will be published in the Classified Section at the rate of 60 cents a line across the page, each issue, plus \$3.00 for name and address. Minimum charge, \$6.00. No display permitted.

Write directly to those offering the machines for sale, for prices and full descriptions. If what you seek is not advertised, use the blank enclosed to make known your wants in either new or used machinery and the publisher will pass them along to the advertisers.

### FOR SALE BY

**United Machinery & Supply Co., 1241 Walton Ave., St. Louis, Mo.**

Blue print machine, cylinder type.	Rolls, Ryerson 6"x6" pyramid.
Brake, D. & K. 10"x10 ga. m. d.	Seamer, Niagara double 40" cons.
M. G. set, 10 k. w. 220/440 a. c. k.	Shear, Quickwork, 14 ga., x5' throat.
115 d. c.	Press, Bliss No. 1 1/2 b. g.
Nibblers, Campbell Nos. 1 & 1A, m. d.	Press, horn, No. 44 Ferracute.

### FOR SALE BY

**Sharpsville Boiler Works Company, - - - - - Sharpsville, Pa.**

#### ARC WELDERS.

3-300 ampere Lincoln arc welders.  
 4-400 ampere Lincoln arc welders.  
 1-General Electric automatic arc welder.  
 3 phase, 60 cple, 220 volt Motors on these sets.

### FOR SALE BY

**Brownell Machinery Co., - - - - - 150 Pine St., Providence, R. I.**

Dieing mche., 50-ton Henry & W.	Miller, No. 4 Cincinnati vertical.
Grinder, 20"x120" Norton plain.	Miller, No. 3 Becker vert. rotary.
Grinder, 12"x36" Bath universal.	Planer, 24"x24"x6' Whitcomb.
Lathe, 60"x30' Pond.	Press, No. 154-C Cleveland dbl. crk.
Lathe, 32"x28' New Haven.	Screw machine, No. 4 B. & S. w. f.
Lathe, 20"x10' Whit.-B., q. c. g., taper.	Shaper, 16' Garvin plain.

### FOR SALE BY

**J. Bleser Mfg. & Machy. Co., 16th & Madison St., Springfield, Ill.**

Air comp. 6x6 Ingersoll-Rand. \$ 195.	Miller, No. 6 Transit. .... \$ 295.
Knife grinder, 79" ..... 175.	Press, arch. .... 195.
Lathe, 32"x8' taper att. .... 250.	Radial drill, 7' Bement. .... 395.
Lathe, 36"x18' L. & Ship. m. d. 1895.	Shaper, 12" Gould & E. .... 125.
Miller, No. 3H LeBlond. .... 500.	Slotter, 13" Bement. .... 295.

### FOR SALE BY

**Wigglesworth Machinery Company**

**199 Bent Street, - - - - - Cambridge, Mass.**

Brake, 10' 6"-3/16" ga. Geo. Ohl.	Hammer, No. 6B Nazel.
Boring mill, 24" Bullard, New Era.	Miller, No. 2-B Brown & Sharpe.
Boring mill, 42" Bullard New Era.	Miller, 5B heavy B. & S., rap. trav.
Boring mill, Cleveland 2 1/2" bar.	Nibbler, Gray 3/16"-34" throat.
Grinder, No. 2 Cincinnati, centerless.	Shear, No. 6120 Niagara, 15" gap.

Send for Complete Stock List.

## USED AND REBUILT MACHINERY

### FOR SALE BY

**Herben Machinery & Equipment Co., 30 S. Clinton St., Chicago, Ill.**

Air compressor, 10x10 horizontal.  
Bor. mill, vert. 60" Niles, 2 hds. \$375.  
Brakes, apr., 8', 10', 12, 14, 16, 18 ga.  
Brakes, press, 10' 10 ga., 10' 1".  
Drills, 14, 16, 26, 36", 1, 2, 3, 4-spdl.,  
Hammers, pwr. Little Giant, 100 lb.  
and 250 lb.  
Lathes, large stock, all sizes.  
Miller, univ., #1 Cinc. \$100; #2, \$350.  
Presses, Nos. 2, 3, 5: hyd. 100 ton.

Punch & shear, Badger, \$125.  
Saws, 1, 2, 5 Marvel h. s.; 6x6, 9x9.  
Screw machines, Nos. 1, 2, 3 Foster.  
Shaper, 20" Walcott, \$85.  
Shapers, 7", 16", 20", 24"  
Shears, pwr. sq., 10' 4"; 10' 14ga. 36" 18g.  
Stacker & portable elevator, Economy, \$110.  
Welders, spot, 5 and 10 k. w.  
Welders, arc, 200 and 300 amp.

### FOR SALE BY

**Marr-Galbreath Machinery Co.,**

**55 Water St., Pittsburgh, Pa.**

Quality Not Reflected in These Low Prices.

Air comp., 10x10" Chicago, NSB.  
Air comp., 12"x10" Bury, belted.  
Air compressor, 5"x5" Ing.-R., m.d.  
Air compressor, 6"x6" Worth, vert.  
Bender & straightener, No. 4 H. & J.  
Blowers, Buffalo No. 4E 1/60/220.  
Blower, No. 3 Root, 2500 c. f. m.,  
12" outlet, 16 oz. pressure.  
Bolt threader 4" Geometric b. or m.d.  
Boring mill, 34" Bullard vtl. thread  
attachment.  
Boring, mill, 36"-44" N-B-P., sh. m.d.  
Buffer, 5 h. p. Hisey-W., 3/60/220.  
Bulldozer, No. 6 W-W., clutch, b.d.  
Crusher, Allis-Chalmers, 9x9", 2-roll,  
belt drive.  
Die sinker, No. 3 P. & W., r. t.  
Driller, 5, 6-sp. Detroit, chucks.  
Drill, 5, 6 spdl. L.-G., b. b., m. d.  
Drill, radial, 35" Cin-Bick, t. a., m. d.  
Drill, 20" Barnes, all geared.  
Gear cutter, 18" Newark.  
Generator, 125 k. v. a. 3/60/220/900.  
Generator, 50 k. v. a. 3/60/220/1200.  
Grinder, 7th. p. U.S. dbl. end, 3/60/440  
Grinder, parallel, U. S. 3 h. p., 220  
v. d. c.  
Grinder, surf., No. 3 W. & M., m.d.  
Grinder, surf., No. 2 B. & S., m. d.,  
magnetic chuck.  
Grinder, disc, vert. 30" Gardner, m.d.  
Grinder, flex. shaft motor 1" h. p. 1/60.  
Grinder, T. & C. No. 1 G. & L., m.d.  
Grinder, pl. 11 B. & S. 4x30" (cheap).  
Hack saw, 6x6" Economy, No. 2 b.d.  
Hammer, Syntro Elec., 1/60/110/.  
Hammer, 30 lb. United, power.  
Hammer, No. 2B Nazel, motor dr.  
Hammer, 400 lb. Bliss board drop, b.d.  
Hoist, 2-ton Sprague Elec., 3/60/220  
volt motor.  
Hoist, chain, 4-ton triplex.  
Jewelers screw press, King, bench.  
Jointer, bench, 4" Wallace, 1/2 h. p. mtr.  
Keyseater, No. 4 Burr, cap. 4 1/2 x 45"  
for m. d.  
Lathe, bench, 7"x22" Goodell-Pratt.

Lathe, 11" Sundstrand, g. h., s. p. d.  
Lathe, 24"x16" LeBlond, 6" raising  
blocks, chuck.  
Lathe, 24"x14" Hendey, q. c. g., tie-b.  
Lathe, 12"x8" R. P., g. h., s. p. d.  
Lathe, 12"x8" So. Bend, pl. ch. gears.  
Lathe, 18"x8" L. & S., q. c. g., t. a.  
Lathe, turret, No. 4 W. & S., bar  
feed, m. d. (2).  
Lathe, 32"x14" Bridgeford g. h., m.d.  
Lathe, 28"x20" Bridgeford, b. d.  
Lathe, 20"x8" Hendey, tie bar.  
Lathe, 14"x19" Fay automatic.  
Miller, 18" Cin. Mfg., motor 3/60.  
Miller, No. 4 Ohio table 101".  
Pipe machine, 12" Cox., b. d.  
Planer, Gray, 56x48x10", 4 heads.  
Planer, 30"x30"x10" Liberty, 2-h. m.d.  
Planer, 48"x48"x10" Gray, 3-hds., b. d.  
Press, Arbor, No. 8 Greener, hand  
Press, 30-ton Lourie hydraulic.  
Press, Arch, No. 3A Mossberg dial,  
feed, 12 positions.  
Press, D.C. No. 138A Stoll, 3" stroke.  
Press, horn, 42-h. p. Toledo.  
Press, No. 58 1/2 Toledo, tie-rod, 9"  
str. fc., motor drive.  
Press, No. 35 Nia., punch, type, pl.  
Presses, o. b. i., 18, 19, 20 Bliss.  
Punch, SE., 24" tht. 1/2"x1", m. d.  
Punch & stake riveter, 30" Badger.  
Punch & s., 25x24 U. Buf. univ., m. d.  
Riveter, No. 3A, Hi-Speed, m. d.  
Rolls, 42"x3" Pexto, latch hsgs., hand.  
Saw, No. 0 Hunter, m. d. sharpener.  
Shaper, 20" G & E b.g., hi. duty, b.d.  
Shaper, 21" Smith & Mills.  
Shaper, 24" Barker b. g. V-ram, b. d.  
Shaper, 24" Gould & Eberhardt, b.  
g., high duty, b. d.  
Shear, 42"x1" Nia., 18" gap. (Rebuilt)  
Steam turbines, 100 h. p. 900 rev. (2).  
Transmission, No. 000 Reeves, 5:1.  
Unishear, 36" throat, 14 ga., m. d.  
Welder, arc, 200 amp. Linc. 3/60/220.  
Welders, arc, 35 amp., transformer.  
Welding & cutting generator, Carbic

Partial List. Get Our New Complete Stock List.

# USED AND REBUILT MACHINERY

## FOR SALE BY

West Penn Machinery Company

1210 House Building,

Pittsburgh, Pa.

Air compressors, 30 to 2500 cu. ft.  
Bolt cutter, 2" Landis, dbl. hd., b. d.  
Bor. mills, 24" & 42" Bullard New Era.  
Bor. mill, 36" Bullard, side hd., s.p.d.  
Boring mill, 42", 2 heads, Bullard.  
Boring mill, 48" Gisholt r.p.t., 2 hds.  
Bor. mill, 76" Bullard, 2 hds., b. d.  
Boring mill, 84" Betts, 2 heads, m. d.  
Boring mill, 24" bar Cleveland, s.p.d.  
Bor. mill, hor. 4" bar Sellers, fl. type  
Bor. mill, Niles floor type, 4" bar.  
Brake, 7' x 10' ga. Dreis & K., m. d.  
Brakes, 3' & 10' x 3/16" D. & K., m. d.  
Bulldozers, Nos. 2, 4, 6, 9, 28, & 30.  
Cranes, Electric Traveling.  
Drill, 2 spindle Avey, b. b., m. d.  
Drill, sens. 4-spdl. Avey, belt drive.  
Drill, 4-sp. Colburn, table 20x72.  
Drill, mult. 12 sp. Pratt & W., b. d.  
Drill, hvy. duty, D-6, 36" Colburn.  
Drill, radial, 4' Prentice, t. a., b. d.  
Drill, radial, 6' Fosdick-D., s. p. d.  
Drills, upright 10" to 36".  
Drill, Baker, table 22x17", s. p. d.  
Engine, gas, horiz., 20h. p. Bessemer.  
Flanger, McCabe, 1" capacity, dies.  
Forging mch. 14" Acme, st. fr. b. d.  
Gear cutters, 11", 18" & 24" Gleason.  
Gear cutter, spur, 36" x 10" Newark.  
Gear hobbers, 30" Newark, m. d.  
Grinder, cyl. 10" x 52" Norton, m. d.  
Grinder, disc, No. 6-18-1 Besly, m. d.  
Grinder, nail die, No. 101 Bridg., m. d.  
Grinders, surf., rot. 8" Heald.  
Grinder, sur. 14" Pratt & W., m. d.  
Grinder, surf. 42" Spring, tbl. 18x84".  
Grinder, surf. 84" Diamond, m. d.  
Grinder, univ. No. 3 Landis, 12x40".  
Hammer, Blacker, power, 35-lbs.  
Hammers, No. 3-B Nazel.  
Hammers, steam, 600 lb. to 6000 lbs.  
Lathe, 16" x 7" So. Bend, c. c. g., m. d.  
Lathe, 18" x 7" Rahn-L. q. c. g., b. d.  
Lathe, 24" x 10" Reed, q. c. g., b. d.  
Lathe, 24" x 12" American, q. c. g., b. d.  
Lathe, 24" x 12" L. & S. q. c. g., t. a. b. d.  
Lathe, 24" x 16" Bridgeford, g. hd. m. d.  
Lathe, 30" x 18" LeBl. g. h. q. c. g., m. d.  
Lathe, 32" x 16" Pond, t. g., b. d.  
Lathe, 36" x 16" L. & S. grd. hd., s. p. d.  
Lathe, 36" x 18" Putnam, l. c. g., t. a. b. d.  
Lathe, 38" x 17" Pond, t. g., b. g.  
Lathe, gun boring 49" x 82", m. d.  
Lathe, turret, No. 6 Warner & S.  
Lathe, turret, 18" Libby, m. d.  
Lathe, turret, 24" Steinie, 64" hole.  
Lathe, spinning, 32" x 6" Bliss, b. d.  
Miller, hand, No. 2 Pratt & W.  
Miller, pl. No. 2 Kempsmith, b. d.  
Millers, pl. Nos. 2A, 2B & 3B Milw.  
Miller, plain, No. 3 Cincinnati.  
Miller, pl., No. 24 B. & S. tbl. 17" x 72"  
Miller, pl., No. 28 Ohio, tbl. 52x11 1/2

Miller, slab, 48" x 40" x 10" Ingersoll.  
Millers, vert. Nos. 4-B & 5-C Becker.  
Nut tapper, Acme, 10-spdl 1 1/2", s. auto.  
Nut mche., Wat-far. 1/2" cold, b. d.  
Pipe machines, 8" Oster.  
Pipe mches., 6", 8" & 12" Williams.  
Planer, 36" x 36" x 8" Gray, 3 hds., m. d.  
Planer, 56" x 12" Detrick & H., m. d.  
Planer, 60" x 60" x 12" Sellers, 3 hds.,  
Planer, 96" x 96" x 33/4 hds. rev. m. d.  
Press, arbor, No. 17 Green., 18-ton.  
Press, No. 3 Bliss, Stiles type.  
Press, cam. No. 69N Bliss, dbl act. inc.  
Press, o. b. i. Bliss, Nos. 18, 19, 20.  
Presses, Nos. 4 & 5 Nia., 2 & 2 1/2" st.  
Press, No. 55 Toledo 20" x 15", 2 1/2" st.  
Press, No. 64 Cons., 17" x 17", str. 4 1/2".  
Press, No. 57 Toledo, 32" x 32", str. 6".  
Press dbl. crk., No. 5 Bliss, 2" str.  
Press, dbl. crk. Farrell, 16x44", 6 st.  
Press, screw, No. 57 Niagara.  
Press, hand screw, No. 192 Tol. dbl.  
Press, hyd., 200-ton Oilgear, 4 post.  
Press, forging, United 1000 ton hvy.  
Press, wheel, 300-ton, motor drive.  
Punch & s., No. 5-H Bertsch hand.  
Punch & s., "C" Clev. 13 1/2" x 1" m. d.  
Punch, mult., No. 3 H. & J. 10".  
Riveters, air, hammer, spinning.  
Rolling mill, 9" x 18", m. d.  
Rolls, bend 50" x 3/16" Bertsch, int. t.  
Roll, angle bending, 2" x 2" x 1/2", m. d.  
Rolling mill, 9" x 16", m. d.  
Saw, fric., Model I-A Hunter, m. d.  
Saws, friction, Nos. 2, 3 & 4 Ryerson.  
Saw, cold, No. 6 Coch.-Bly, s. p. d.  
Screw mchs. Nos. 52, 53, 55 Nat. A.  
Shaper, vert., Jones 10" stroke, m. d.  
Shaper, 20" N.-B. P. trav. hd., m. d.  
Shaper, 16" Steptoe, b. g., b. d.  
Shaper, 16" Columbia hvy. duty m. d.  
Shapers, 16", 20", 24" & 36" G. & E.  
Shaper, side head, Rockford.  
Shear, angle, 6" x 6" x 1" H. & J.  
Shears, alligator, 1 1/2", 3", 3" & 4".  
Shear, alligator, No. 18 Carlin, cap. 2 1/2"  
Shear, bevel, Lennox 1/2", b. d.  
Shear, cir. & fln. No. 208A Nia.  
Shear, guil. No. 5 H. & J. 4" sq., m. d.  
Shear, sq. 8" x 14 ga., Geo. A. Ohl, b. d.  
Shear, sq. 10" x 18 ga., Niagara, m. d.  
Shear, sq., 12" x 14 ga., Peerless, b. d.  
Shear, 12" x 1 1/2" Wheeling, 31" gap.  
Shear, 16" x 1 1/2" L. & A., 20" gap m. d.  
Shear, slit., O. E. cap. 1/2", 14" blade.  
Shear, Pels, type BLUEFGA-20,  
1-3/16" 1/2".  
Slotter, 15" B.-M. tbl. 30" dia., m. d.  
Slotter, 36" Bement, crank: 15" Dill.  
Straightener, 2-A Kane & R. 20-roll.  
Straightener, 14", 4" rd. Abramson.  
Welder, spot, 40 k.w. Thom. 2 pcs. 1/2"

# USED AND REBUILT MACHINERY

## FOR SALE BY

### McDonald Machinery Co.,

Bolt mchs., Landis & Acme 14".  
 Boring mill, Lucas No. 21 horizontal.  
 Boring mills, Barrett 5" bar horiz.  
 Boring mill, Niles 36" vert., 2 hds.  
 Boring mill, Gisholt 42" vert. m. d.  
 Brake, Ohl 10" No. 10 ga. m. d. press.  
 Drills, Cin-Bickford 3" & 3 1/2" radials.  
 Gear cutter, G. & E. 36" s. p. d.  
 Gear cutter, G. & E. 60" m. d.  
 Gear hobber, G. & E. 24".  
 Grinders, B. & S. No. 2 surf. & univ  
 Grinder, Norton 10x120" plain.  
 Grinder, B. & S. Nos. 10 & 16 plain.  
 Keyseaters, M. & M. Nos. 1 & 2.  
 Lathes, Reed-Prentice 16"x8", q. c. g.,  
 grd. hd.; Hendey 14"x6", q. c. g.;  
 50 others in stock.  
 Milling machines, B. & S. No. 5, vert.  
 Milling mchs., B. & S. No. 1 1/2 Cinc.

### 1535 N. Broadway, St. Louis, Mo.

No. 14, Hendey No. 1-B, Kemp.  
 No. 3; Ohio No. 29; vertical slott.  
 attach., all universal; Kemp. No. 1,  
 LeBlond No. 3-H; Brown & S.  
 No. 3-B, s. p. d., Brown & Sharpe  
 No. 3, all plain, Cincinnati 12"  
 Mfg.; Milw. No. 3-B s. p. d., d. o.  
 Cincinnati No. 3-S pl., s. p. d.  
 Punch press, d. c. grd., 79" between  
 uprights, 5" str., wt. 38,000 lbs.  
 Niagara No. 66 D d. c. Ohl d. c. grd.  
 Shapers, G. & E., S. & M., Cin., Ohio,  
 American, Steptoe, Queen City,  
 12", 16", 18", 20", 24" and 26"; S. &  
 M. 28", s. p. d.; Cin. 24" m. d. g. b.;  
 American 24" m. d., gear box.  
 Turret lathes, W. & S. No. 2A univ.  
 Turret lathes, Libby 18" geared  
 head universal, Gisholt univ.

## FOR SALE BY

### Belyea Company, Inc.,

#### D. C. MOTORS

Adj. Speed—220 Volt

H. P.	TYPE	SPEED
1-1500	West.	470/600
1-300	Cr. Wh.	300/400
1-250	El. Dy.	300/900
3-120	G. E.	300/750
1-100	West.	365/600
3-80	Diehl	500/1100
1-60	G. E.	400/1050
2-50	West.	225/600
1-40	West.	300/900
1-35	West.	500/1500
1-35	Cr. Wh.	800/1600
1-25	West.	400/1200
3-25	West.	650/2200
1-20	West.	650/1300
2-20	West.	375/1500
20-20	G. E.	650/1950
1-20	West.	500/1500
1-20	G. E.	500/1500
2-15	El. Dy.	900/900
1-15	West.	600/1200
6-15	West.	400/1600
1-10/14	El. Dy.	300/1200
30-10	West.	500/1500
20-10	G. E.	600/1800

#### MOTOR GEN. SETS,

2-500 k. w. West. D. C. Gen. 250 v.  
 conn. to 710 h. p., 8 p. f. Synch.  
 Motor, 4600/2300 v. 1200 r. p. m.,  
 3 ph., 90 cy.  
 500 k. w. G. E., D. C. Gen. 250/275 v.  
 comp'd. inter pole, 720 r. p. m.,  
 coupled to 700 h. p. G. E. Type  
 ATI, Synch. Motor, 3 ph., 60 cy.,  
 720 r. p. m., 2200/440 v.

Above is Only Partial Listing. We Specialize in All Electrical Equipment,  
 Motors, Pumps, Generators.

### 150 W. 18th St., New York, N. Y.

300 k. w. West. 600 V., D. C. Gen.,  
 conn. to 433 h. p. synch. motor  
 4600/2300 v., 3 ph., 60 cy., 1200  
 r. p. m.  
 175 k. w. G. E., D. C. Gen. 275 v.  
 comp'd. inter pole, dir. conn. to 290  
 h. p. G. E. Synch. Motor, 2300/440  
 v., 3 ph., 60 cy., 720 r. p. m.

#### A. C. MOTORS

##### Synch. Type

H. P.	TYPE	VOLTS	SPEED
1-2850	G. E.	2300/4150	450
1-675	Al. Ch.	2200/550	900
1-600	G. E.	2200/550	257
1-260	Al. Ch.	2200/440	720
1-125	West.	2300	900
1-50	G. E.	440/220	1200
1-35	G. E.	440/220	1200

##### SLIP RING

1-1200	West.	2200	360
1-600	G. E.	2300/550	257
1-600	G. E.	2300/440	705
1-450/360	West.	2200	875/700
1-400	West.	2300	514
1-400	West.	550	505
1-300	G. E.	550	575
1-250	F. Morse	2200	1200
1-250	West.	2300/440	700
2-200	West.	220/440	900
1-200	G. E.	220/440	900
1-150	G. E.	440	1750

##### SQUIRREL CAGE TYPE

1-300	Cr. Wh.	2300/220	580
1-250	West.	2300/440	580
1-150	G. E.	220/440	900
1-150	West.	220/440	720
1-150	West.	220/440	580

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### FOR SALE BY

**The O'Brien Machinery Co.,**

**113 N. Third St., Philadelphia, Pa.**

Boring mill, 30" Rogers, vert., hd.  
Column facer, 14" Espen-Lucas.  
Grinder, No. 55 Heald.  
Grinder, No. 2 Van Norman Pistol.  
Grinder, 10"x52" Landis, self contained, plain.  
Hammer, 800 lb. Erie, steam forging.  
Hammer, 1100 lb. NBP. steam forg.  
Hammer, 2000 lb. Chambersburg double frame steam.  
Lathe, 30"x10' Greaves-Klusman, belt drive.  
Lathes, 18"x8' Bradford, mtr. dr.  
Lathe, 24"-40"x22' McCabe, belt.

Lathe, 24"x12' Reed-Prentice, s.p.d.  
Lathe, 66"x38' Bement, motor drive.  
Miller, No. 3 K. & T., univ. table 55"x15", range 34"x12"x19".  
Miller, No. 1 1/2 Rockford plain, belt drive, table 9"x38 1/2".  
Miller, No. 4 Cincinnati vertical, single pulley drive.  
Pipe machines, 2, 4, 6, 8 and 12" belt and motor drive.  
Punch, beam, type 1G Clev., 24" bms.  
Punch, No. 3 Southwark 4x4", mtr.  
Shapers, 14, 16, 20 & 24" various makes  
Shear, 8' Niagara, 15" gap, 3-16" cap.

### FOR SALE BY

**Bennett Machinery Co.,**

**30 Church St., New York, N. Y.**

Automatics, No. 23 New Brit. chuck.  
No. 34 New Britain chucking.  
No. 55 and No. 53 National Acme.  
Boring mill, 48" Colburn.  
Bolt cutter, 2" Acme double head.  
Sensitive drills, 3, 4 and 6 spindles,  
Allen, 7" and 12" overhand.  
4 spindle Barnes, 22 1/2", heavy duty.  
12 spindle Pratt & Whitney No. 12.  
Radial drills, 5' Cincinnati-Bick., s. p. d.  
4' Cincinnati-Bickford motor on arm.  
4' American, s. p. d.  
3 1/2' and 3' Cincinnati-Bickford s. p. d.  
2 1/2' Fossdick, s. p. d.  
Gear cutter, 60" Brown & S. spur.  
36" Fellows No. 6, gear shaper.  
6" Gleason Straight Bevel Gear Generator.  
Grinders, No. 348 Covell-Hanchett 48" face.  
No. 11 B. & S. 6x32, self cont.  
16"x96" Norton plain.  
No. 55 Heald Cylinder.  
No. 2 Oakley univ. tool & cutter.  
No. 2 Norton univ. tool & cutter.  
No. 2 Ohio univ. tool & cut. m. d.  
Hammer, 300 lb. Beaudry, m. d.  
Keyseater, No. 3 Mitts & Merrill.  
Lathes, 12"x6" Seneca Falls, q. c. g., co.  
No. 3 Cincinnati pl., grd. hd., s. p. d.  
14"x6" Monarch q. c. g., cone.  
14"x24"x7" Barnes sliding bed gap.  
16"x6" American geared hd., m. d.  
16"x8" Pratt & Whitney, cone t. a.  
18"x8" Lodge & S., q. c. g., cone.  
19"x10" LeBlond t. a., cone.  
20"x8" Lodge & S., q. c. g., cone.  
20"x8" Hendey t. a., cone.  
24"x12" Putnam, q. c. g., cone.  
21"x12" LeBlond grd. hd., s. p. d.  
26"x18"x14" McCabe dble. spindle.  
26"x14" Pond, q. c. g., t. a., cone.  
36"x19" N. H. P. grd. hd., m. d.  
36"x32" LeBlond, q. c. g., 2 car.

26"x48"x18" McCabe double spin.  
30"x40" Pond q. c. g., cone.  
Lathes, turret, No. 4 W. & L. (3).  
18" Libby t. a.  
21" & 24" Steinel, m. d. (3).  
Millers, univ., No. 1 B. & S., cone.  
No. 2 Cincinnati, cone.  
No. 2A Hendey, m. d.  
No. 3 LeBlond, cone.  
Millers, plain.  
No. 2 Kemp Smith, s. p. d.  
No. 2B heavy, B. & S., s. p. d.  
No. 3B B. & S., s. p. d.  
No. 4G LeBlond, s. p. d.  
No. 5 Cincinnati, s. p. d.  
Millers, vert., No. 4 B & No. 3 Becker  
No. 14 Garvin, table 20x48.  
No. 33 Kemp Smith prod. 50" feed.  
Pipe mchc., 2" Bignall & K., m. d.  
6" Williams Rapiduction, m. d.  
8", 12", 18" Saunders.  
Presses, No. 5 Bliss "Stiles".  
No. 1245 Maxams o. b. i. double action cam draw.  
No. 44 Adriance o. b. i. double action cam draw.  
200 ton Niles carwheel, 48"  
Planers, 17"x4' Whitcomb, m. d.  
24"x6" Cincinnati, m. d.  
36x42x12" Cincinnati.  
48x36x16" Pond.  
Rolls bending, 8"x1 1/2" Scully.  
Slotter, 18" Newton, equals new.  
Squaring shears, 10"x5/16" Ohl.  
10"x3/16" Ohl, m. d.  
6"x10 gauge Loy & Nawrath.  
36"x14" Niagara, m. d.  
Saws, 6" Peerless univ. Shaping, m. d.  
Shapers, 16" G. & E., cone.  
16" Cincinnati, m. d.  
20" G. & E., m. d.  
20" Smith & Mills, cone.  
20" Rockford, m. d.  
34" Stockbridge, m. d.

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Gridley automatic screw machine, 14", style G, 4 spindle, motor driven, serial number 8300A. Used only in our plant, cheap for cash.

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No. 2½ B Milwaukee vertical.

No. 3 Cincinnati univ. comp., cone.  
No. 3 Cincinnati plain, s. p. d.

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Nos. 1, 2, 3 Brown & Sharpe univ.  
No. 11 Brown & S. plain, s. p. d.  
No. 2 Diamond surface, m. d.  
84" Diamond face m. d.

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Rivett & Heald internals.  
No. 70 Heald internal.

#### DRILLS

No. 2B Edlund three spindle, power feed.  
Two-spindle Leland & Gifford.  
One and two spindle No. 2 Colburn.

No. 363 Barnes all geared.  
C12 Natco multiple.  
No. 30 Natco multiple, round head.

#### MISCELLANEOUS

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15" Gleason spiral finishers.  
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No. 6 Warner & Swasey power feed to cross slide and turret.  
18x8 Hendey lathes.  
No. 3A Warner & Swasey.

No. 4 Warner & Swasey universal  
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542 and 652.  
Drills, h.s., b.b. Allen, Avey, Leland  
& Gifford 4-spindle No. 2.  
Drill, radial, Cincinnati-Bickford 3',  
Prentice 4'.  
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E4, E5, BG482 and BG 724.  
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Gear generators, Gleason 8" mfg. st.  
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roughers and finishers.  
Grinders, Brown & S. No. 10 s.p.d.;  
No. 2 B. & S., univ. & surface;  
Cin'ti No. 3 univ. 12x48"; Norton  
pl. 6x32", 10x50", 14"x72"; Norton  
crank pin No. B-81, 14"x36" and  
48"; Norton crank pin type No. 80,  
16"x72".  
Lathes, Monarch 14"x6" q.c.; Flather  
16"x6"; Hamilton cone 16/28x10";

Hamilton g.h. 16"x9" and 18"x16".  
Lathes, turret, Acme No. 2 & 3½"x  
36" g.h.; J. & L. 2"x24" & 3"x36";  
Warner & Swasey Nos. 2, 4 & 6.  
Milling mchs., B. & S. No. 1½ univ.;  
Cleveland No. 2 univ.; Cin'ti plain  
No. 2 high power; LeBlond No. 4  
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Planers, Cincinnati 26x26x8' 1-head;  
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Gray 48"x48"x16' 2-heads.  
Press brake, 12"x10 ga. Loy & Nawr.  
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Stoll DCSS 54" bu. 54" shaft; Stoll  
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Mill, No. 4 Cin. hi. power pl., c. p.

Grinder, No. 3 Wilmarth & M. surf.

Mill, No. 1 B. & S. vertical, c. p.

Grinder, No. 14 P. & W. vert. surf. b. b.

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Keyseater, 3A Mitts & Merrill.

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Shaper, 20", 24" Sieptoe crank, b. g.

Lathe, 18"x10' Amer. q. c. g., comp.

Shaper, 15" Potter & Johnston, univ.

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Air compressors, belted and motor.

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Lathe, 28x16 Bridgeford.

Bolt threader, 2" National.

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Shapers, 16, 18, 20, 24 and 32".

Wheel presses, 48" & 60".

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Brake, No. 205 Chicago, 10"x3/16",

over arm, single pulley.

motor 3-60-220.

Miller, vert., No. 5-C Becker.

Bulldozer, No. 9 Williams-White;

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24" stroke, 48" die space, weight about 70,000 lbs.

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Car wheel borer, 42", hub fac. att.

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Press, No. 3 Bliss dbl. cr. grd., 36"

Drill, 3 spindle, 28" Barnes.

bet. uprights, 4" shaft.

Drill, 4 spdl. Colburn No. 4.

Press, Perkins dbl. cr., 24" bet. hag.

Drill & tap., No. 314 Baker, cap. 3".

Punch, L. & A., 1" thru 1", 24" thrt.

Drill, radial, 4' Carlton, s. p. d.

Shaper, 36" G. & E., b. g. crank.

Lathe, 48"x20' Betts-B., a. c., m. d.

Shears, alligator, cap. 1 1/2 & 3" sq.

Shear. rot., No. 8 Quickwork, 12 ga.

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Drill, 4' Bickford, s. p. d., gear box.  
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Lathe, 20x10 Monarch, q. c. g.,  
50" Niles, vertical Boring Mill, two heads on cross rail.  
Lathe, 16x6 Hendey, q. c. g., t. a.  
Lathe, 25x14 Bridgeport, tap. att.  
Miller, No. 14 Cincinnati, plain.  
Planer, 24"x24"x6" Bement, b. d.  
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14"x6" Hendey, taper draw sp.  
14" 1" Hardinge screw cutting.  
18", 20", 24", spinning.  
24"x12" American.  
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14"x6" Monarch.  
16"x6" Lodge & Shipley, tap. att.  
16"x6" Sundstrand, tap. draw. att.  
16"x6" LeBlond, taper att.  
16"x6" American.  
16"x8" Cincinnati.  
16"x8" Bradford, taper att.  
16"x8" Pratt & Whitney, tap. att.  
18"x8" Reed-Prentice, grd. head.  
20"x17" Oliver, taper attachment.  
18"x8" Reed Prentice automatic.

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No. 14 Becker-Brainard universal.  
No. 4 Oesterlein rapid production.  
No. O. Y. B. & S. inclinable div. hd.  
No. 3 Becker, No. 3 Bristol vertical.  
3" Pratt & Whitney automatic (2).  
Whitney, Burke, Chicago, U. S.

#### DRILL PRESSES.

Leland-Gifford, 4-spindle.  
Barnes hi-spd., 3 sp., pwr. & hd. fd.  
Barnes, 24", 3 sp., b. g., pwr. fd.  
Edlund, 3 sp., pwr. & hd., m. d.  
Edlund, 2 spindle.  
Leland-Gifford, single spindle.  
No. 216 Baker, No. 5 taper.

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No. 4 W. & S. open hex. turret.  
No. 3 W. & S. Fox turret & plain.  
No. 1B Foster chuck and bar feed.  
No. 6 Brown & Sharpe.  
No. 7 Foster, 24" capacity.  
No. 7 Foster, pwr. cross & lg. fd.  
No. 3 Foster.  
Turner, 4 spindle, rotary drill

#### MISCELLANEOUS.

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mtr. dr., 14" cup wheels.  
Buffing lathe, 3 h. p., Cincinnati.  
Gear cutter, No. 3, 26 B. & S.  
Surface grinder, Nos. 2 & 3, W. & W.  
Balancing wheel, 42"x5" Rockford.  
Bolt cutter, Acme, geometric.  
Radials, 4' American, gr. & sens.  
Arch press, No. 3-A Walsh.  
Arch press, 36" Toledo.  
Arbor press, 5 h. p., m. d.  
Die slotting machine, Garvin No. 3.

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Telephone Lincoln 6320

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Boring bar, Cleveland, 24" spindle.  
Drill, radial, 8' Cincinnati-Bickford.  
Lathe, 18"x8' Monarch, motor in leg.  
Lathe, 20"x12' Sidney, m. d.  
Lathe, 30"x16' Monarch, s. p. d.

Press, No. 34-B Bliss, toggle draw.  
Press, No. 22 Bliss, roll feed.  
Saw, 6"x6" Peerless Universal.  
Shaper, 20" American, auto-oiled.  
Shear, Nia, No. 407-A ring & circle.  
Wheel press, N. B. P., 400 ton.

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C. H. Waters Machinery Co.

730 East Beardale Ave.,

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Comp., air, 6"x6", 44"x6", 44"x44".  
Chicago Pneumatic, 12"x12"x74"x12"  
with 50 h. p. motor.  
Drill, No. 12 Natco.  
Drill, 4' Reed Prentice radial.  
Drill, 24' Carlton radial.  
Grinder, 16"x60" Modern, self-contained counter.  
Grinder, cylinder, No. 55 Heald.  
Grinder, drill, No. 3CA Gallmeyer & Livingston.  
Key-seater, Mitts & Merrill, No. 2.  
Lathe, 7" P. & W., bench collets and chuck.  
Lathe, 24"x14' LeBlond, p. c. g.; chuck  
Lathe, 17"x6' LeBlond, q. c. g.; chuck.

Lathe, 17"x8' Prentice, q. c. g.  
Lathe, 16"x10' Cincinnati, p. c. g.; ck.  
Miller, No. 3 Hurke, bench.  
Miller, No. 2 Fox, hand.  
Miller, No. 24 LeBlond, plain.  
Miller, No. 14 Grand Rapids, plain.  
Planer-Shaper, 24" Cincinnati.  
Shaper, 24" Cincinnati, motor drive.  
Shaper, 24" Gould-Eberhardt, c. d.  
Press, consolidated, No. 564.  
Press, Bliss, S. S. No. 309.  
Press, Bliss, S. S. No. 374.  
Press, Robinson dbl.-crk. No. 14 S.  
Press, Perkins b. g., No. 5.  
Press, American Can, No. 3.  
Bullard vertical turret, 24".

### FOR SALE BY

Brown Machinery Co.,

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Brake, Chicago Steel, 8' 18 gauge.  
Drills, 14, 16, 20, 22, 24 & 42"  
Drills, radial, 2, 3 & 4' American, triple purpose.  
Gear hobbors, G. & E. 12" & 24".  
Grinders, cylindrical, 10x30" Norton, 12x36" Modern, self-contained.  
Grinders, disc, No. 41-20 Besly, m. d.; No. 6-20 Besly; No. 220 Badger automatic.  
Groover, power, 6' horn.  
Hammers vertical 40 & 80-lb. Perfect; 75-lb. Dupont; 130-lb. Justice.  
Lathes, 16"x6' & 8' Monarch q. c. g.; 16"x8' Monarch grd. head m. d.; 18"x12' American grd. hd., taper & turret attach.; 20"x8' LeBlond, heavy, q. c. g.; 28"x12' Putnam, taper attach., 36"x18' Niles q. c. g.  
Lathes, turret, all sizes.  
Millers, plain, No. 14 American; No. 3 Brown & Sharpe; No. 3B Owen vert. attach.; No. 24 Fox.  
Millers, universal, No. 2 Hendey-Norton; Lincoln type, No. 4 Hendey; slab, Briggs type No. 11.

Planer, 42"x42"x10' Pond.  
Presses, straight side, No. 73 Swaine; No. 7 Zeh & Hahnemann; No. 406B Bliss toggle.  
Presses, o. b. i. Nos. 5 & 6 Consolidated comb. grd.; Nos. 1, 2, 3, 4 Loebough-Jordan; No. 33 Swaine  
Punches, sgl. end, Cleveland "C" 26" thr. 4" in 1"; Rock River Style L rapid action, 24" thr. 4" in 1"; No. 6 L. & A. 24" thr. 4" in 1"; No. 7 L. & A. 16" thr. 4" in 1".  
Punch & shears, double end, No. 9C Beloit 12" thr. 4" in 1"; No. L-10 Badger 10" thr. 4" in 1".  
Riveters, No. 5A High Speed 4" cap.; Grant 4" Allen jaw riveter.  
Screw machines., No. 24 P. & W.; 1x15" P. & W.  
Seamer, double, Swaine hand, 24 ga.  
Shapers, 20" Columbia & Queen City; 24" Ohio.  
Shear, rotary bevel, 4" Lennox.  
Welders, 20k.w. Agnew; 5k.w. Dyer.  
Welder, butt, Federal, 25 cy., 440 v.

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Miller, No. 1 Cleveland universal.....	700.
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Cranes, 3 ton to 30 ton.	

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 Also various lathes 14" and larger, q. c. g.  
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 Shapers, 24" Stockbridge, Niles 20".  
 16" Smith & Mills, back geared, gear box, motor drive, a. c. motor.  
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Also other tools not listed above.

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2 1/2" bar Cleveland horizontal.  
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 36" Bullard vertical, 3 head.  
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 72" Wais & King vertical, 2 heads.

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 20"x10' American cone head q. c.  
 24"x12' Lodge & Shipley, q. c.  
 32"x12' Boye & E., cone head q. c.  
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 Nos. 3 & 4 Cincinnati plain s. p. dr.  
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 Brakes, 8', Chicago power 3/16"  
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 Gear cutters, Nos. 3, 4 B. & S.  
 Keyseater, No. 2 Mitts & Merrill.  
 Press, 30 ton Lucas forcing.  
 Radial drills, 3' Bickford.  
 Radial drills, 4' Bickford, s. p. dr.  
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42"x30" Putnam Grd. Hd., S. P. D.  
26"x48"x22" McCabe, Dbl. Spindle.  
36"x18" Amer. Grd Hd. S.P.D. 2 car.  
24"x16" American Grd. Hd. S. P. D.  
18"x6" Lodge & S. Grd. Hd. S. P. D.  
18"x10" Lodge & S. S. P. DGrd. Hd.  
24"x10" Bradford Geared Head Taper,  
Arranged Motor Drive.  
28"x48"x10" Harrington, Slid. Bed.  
30"x18" American Cone High Duty.  
20"x10" American Grd. Hd. S. P. D.  
36"x16" Lodge & S. Sel. Grd. Hd.  
20"x8" Am. Grd. Hd., M. D., late.  
20"x8" Hendey Tool Room, cone dr.

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18"x96" Norton Grinder.  
16"x48" Landis Crankshaft.  
16"x48" & 72" Landis Crankshaft.  
10x30 Queen City, Self Contained.  
Type A Production Abrasive Finishing  
Nos. 50, 55, 60, 65 and 70 Healds.  
6"x18" Landis Plain, Self Contained.  
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Rivett Internal Grinder.

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No. 615 Fellows.  
36BM Gould & E. Gear Rougher.  
No. 3, 26" Brown & S. Gear Cutter.  
No. 4, 48" Brown & Sharpe.  
No. 5-40" Newark Hobber.  
Nos. 1, 2, 4 Adams Farwell Gear Hb.  
18-H Gould & Eberhardt Hobber.  
6", 11", 18" Gleason Gear Generators.

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2" Acme Bolt Cutter.  
2½" Bolt Landis, Lead Screw, Cone.  
6" Landis Pipe Machine, M. D.  
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2" Landis Double-Spindle.

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36"-44" Niles-Bement-Pond Side hd.  
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42" Niles Boring Mills, 2 heads.  
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60" Niles Boring Mill, 2 heads.

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No. 24 Brown & Sharpe.  
No. 3 LeBlond H. D. Plain.  
No. 3 Kempsmith Universal.  
No. 3 Ryerson S. P. D., Universal.  
No. 2 Rockford Universal, complete.  
No. 4 Cincinnati H. P. Pl., S. P. D.  
No. 4 Cincinnati High Power Rect.  
O. A., Plain.  
No. 3-B Milwaukee Pl., Dbl. O. A.  
5B Becker Vertical Mill.  
No. 4 Cincinnati Vertical High Power  
Simple Spindle Drive.  
5" Pratt & Whitney Automatic.  
18" Cincinnati Plain Mfg. Miller.  
Briggs Manufacturing Miller.  
No. 7-H Becker Lincoln type.  
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30"x36"x10" Cincinnati.  
42"x42"x8" Liberty Openside, two  
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3 heads, A. C., M. D.  
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24" Cincinnati Bickford Upright, tap.  
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3, 3½, 4 American Trip. Pur. S.P.D.  
3" Bickford Plain, S. P. D.  
No. 2 Colburn Mfg. H. D. 2-spindle.  
No. 40 Natco Straight Line Multi.

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28" Gould & Eberhardt High Duty.  
16", 20", 24" G. & E., mtr. dr. thr. g. b.  
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Nos. 1 & 3 Baker Keyseating Mches.  
No. 2 Mitts & Merrill Keyseater.  
Nos. 1 & 2 Davis Keyseaters.  
V-18 Amer. Vert. Broaching Mche.  
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No. 1½, 2, 3 Brown & S. Univ., cone.  
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No. 2½ Milwaukee Vertical, m. d.  
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No. 3V Toledo Vertical, s. p. d.  
Becker Vertical Continuous Miller, cone.  
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48" Cincinnati Duplex Auto., m. d.  
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## Automatic

No. 00 Brown & Sharpe.  
No. 0 Brown & Sharpe.  
No. 2- $\frac{3}{4}$ " Brown & Sharpe.  
No. 6-2" Brown & Sharpe.

## Boring Machines (Hor.)

No. 2 Lambert, 4" bar.  
No. 2 Coffman, 3 $\frac{1}{2}$ " bar.  
No. 3 $\frac{1}{2}$  Universal, 3 $\frac{1}{2}$ " bar.

## Boring Mills (Vertical)

24" Bullard, "New Era".  
32" King, m. d.  
36" & 42" Bullard "New Era"  
61" Bullard Maxi-Mill.  
62" Colburn, Heavy Duty.  
72" Colburn, m. d.  
72" King.  
10' Niles.  
7'-10' Betts Extension.

## Drills (Ball Bearing)

No. 1 Leland-Gifford.  
1, 2, 3, 4, 6 Spindle L.-G.  
1, 2, 3, 4, 6 Spl. Henry & Wright.  
4 Spindle Sipp.

## Drills (Mfg.)

Boley Multiple Drillers.  
No. 2 Colburn, 1, 2, 4 spindle.  
24" Cinn.-Bick., slid. head.  
No. 416 Baker.

## Drills (Radial)

3' Western, timken bearing, m. d.  
5' American, full universal.

## Gear Cutters

Nos. 3 & 12 Barber-Colman.  
Nos. 9-H & 18-H G. & E. hob.  
No. 7 Fellows.  
Nos. 6, 65, 61, 612 Fellows.  
6" & 18" Gleason bevel gear.  
37" Gleason bevel planer.

## Grinders (Plain)

No. 2 Cincinnati Centerless.  
Nos. 10, 11, 12 B. & S.  
6" x 32" Norton.  
10" x 18", 24", 36" Norton.  
10" x 50", 72" Norton.  
10" x 36", 32" Landis.  
14" x 36", 50", 72" Norton.  
18" x 96" Norton, m. d.  
20" x 120", 168" Landis, m. d.

## Grinders (Univ.)

No. 2 & No. 2 $\frac{1}{2}$  Bath universal.  
No. 2 Brown & Sharpe.  
No. 4-12" x 66" Landis.

## Grinders (Misc.)

No. 1 $\frac{1}{2}$  Landis, Internal.  
No. 70 Heald, Internal.  
No. 10 Blanchard, surf., m. d.  
No. 16 Blanchard, vertical surf.  
No. 3 Abrasive, surface.  
14" x 36" P. & W. surface.  
15" x 17" x 72" Norton, o. s., surf.  
36" x 84" Diamond, hyd. face.

## Lathes

8" Sundstrand Stub Lathe.  
No. 12 LeBlond Multi-Cut.  
13" x 48" P. & W., Model "B"  
16"-18 $\frac{1}{2}$ " x 6' L. & S. sel. g. h.  
16"-18 $\frac{1}{2}$ " x 8', 10' L. & S. sel. g. h.  
18"-20 $\frac{1}{2}$ " x 6' & 8' L. & S. sel. g. h.  
20"-22 $\frac{1}{2}$ " x 8', 12' L. & S. sel. g. h.  
24"-27 $\frac{1}{2}$ " x 12', L. & S. sel. g. h.  
25" x 24" LeBlond geared head.  
36"-40 $\frac{1}{2}$ " x 14' L. & S. sel. g. h.  
36" x 18" L. & S. pat. head.  
36" x 18", 30" Rahn-Larmon.  
36" x 20" American geared head.  
66" x 21", 36" Putnam t.g., m. d.

## Millers (Plain)

Nos. 0, 1, 2, 3-B, 4-B, 5-B, B. & S.  
Nos. 1-B and 2-B Milwaukee.  
Nos. 2 & 3 Cinn. h. p., s. p. d.  
No. 3-B Milwaukee, s. p. d.  
Nos. 4 & 5 Cinn. h. p., s. p. d.

## Millers (Mfg.)

No. 3 Sundstrand Rigid Mill.  
18" & 24" Cincinnati automatic.  
No. 33-60" Kempsmith.  
No. 6 Lees-Bradner Thread.

## Millers (Vert.)

No. 1 $\frac{1}{2}$  Milwaukee.  
No. 3 Cinn. h. p., motor-in-base.  
No. 4 Cincinnati, h. p., s. p. d.  
No. 5 Brown & Sharpe.

## Planers

22" x 22" x 5' Gray.  
24" x 24" x 12' Gray.  
30" x 30" x 6', 18" Cincinnati.  
36" x 36" x 8', 18" Cincinnati.  
36" x 36" x 10' Gray, rev. m. d.  
36" x 36" x 12' Liberty.  
48" x 48" x 12' Cleveland.  
48" x 48" x 14' Liberty.  
36" x 36" x 24" & 48" x 48" x 10' Gray.  
56" x 56" x 32" Cincinnati.  
72" x 72" x 12' Cincinnati.

## Presses

No. 4 V. & O., o. b. i.  
No. 5-A Toledo, o. b. i.  
No. 14 $\frac{1}{2}$  Toledo Horning.  
No. 96-F Toledo, double crank.  
No. 96-I Toledo, double crank.  
H. & W. 50-ton dieing machine.

## Shapers

16" & 20" American, s. p. d.  
16" & 20" Gould & Eberhardt.  
24" American, s. p. d.  
24" Gould & Eberhart, s. p. d.  
25" Smith & Mills.

## Turret Lathes

No. 1-A Warner & Swasey.  
No. 2-A Warner & Swasey.  
Nos. 3A Warner & Swasey.  
No. 3-B Foster.  
No. 4-L Gisholt, 9 $\frac{1}{2}$  h. s.

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HP	MAKE	Volts	Speed
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250	G. E.	220/440	600
150	G. E.	440	600
30	Fynn-Weich	440	1200
	Slip Ring		
300	All-Chal.	2200	505
200	Burke	220/440	900
150	G. E.	220/440	600
100	G. E.	220/440	720
75	G. E.	220/440	900
30	Fairb.-Morse	220/440	600
	Squirrel Cage		
300	G. E.	220/440	360
200	Westhse.	220/440	1200
150	G. E.	220/440	600
125	Triumph	2300	875
100	Wagner	220/440	1200
75	Ideal	220/440	900
75/90	G. E.	220/440	3600
75	N'westrn	220/440	1800

### Motor-Gen. Sets

720 KW Wgse. 120 v. gen., to  
1055 HP syn. mot. 3/60/2200  
600 RPM comp. with panels  
200 KW G. E. 250 v. gen., to  
288 HP syn. mot. 3/60/220-440  
720 RPM with start. eqpt.

150 KW, same as above

### D. C. Motors

H.P.	MAKE	Volts	Speed
650	Crock.-Whl.	230	600
450	Do.	230	720
115	West. El.	115	850
125	G. E.	230	410
75	N'westrn.	230	1750
75	G. E.	230	1635
50	Burke	230	400/800
50	Crock.-Whl.	230	700
25	G. E.	230	825/2000
20	Wgse.	230	900
20	Wgse.	230	500/1500

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No. 3-A Warner & Swasey Turret Lathe, arranged for M. D.  
3x6 Lodge & Shipley DUOMATIC Lathe, Motor Drive.  
No. 2 Brown & Sharpe Plain Milling Machine, Cone Drive.  
No. 4-B Brown & Sharpe Plain Milling Machine, S. P. D.  
12"x120" Pratt & Whitney Thread Miller, with C. S.  
No. 300 Giddings & Lewis Floor Type Boring Mill, Motor Drive,  
complete with Duplicating Attachment.  
24" Gould & Eberhardt Invincible Shaper, M. D., Rebuilt.  
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No. 10 Brown & Sharpe External Grinder, S. P. D.  
12"x36" Landis External Grinder, arranged for M. D.  
14" Pratt & Whitney Surface Grinder with Countershaft.  
Heim Centerless Grinder, arranged for Motor Drive.  
50 ton Henry & Wright Dieing Machine.  
80 Ton Jarecki Screw Press.  
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- 48" Colburn 2 heads P. R. T., m. d.
- 76" Bullard, 2 heads on rail.
- 10½" N. B. P. heavy, grd. feeds, m. dr.
- 36" Bullard vertical turret, motor dr.

## Lathes

- 14"x6½" Hendey.
- 16"x6½" Hendey, (2).
- 18"x10" American, gd. hd., motor dr.
- 16"x8" American.
- 18"x8" American, (3).
- 32"x23" Bridgeford, grd. hd., s. p. d.
- 36"x26" Bridgeford gd. hd., motor dr.
- 24"-48"x14" McCabe gap gd. hd., m.
- 24"-48"x18" McCabe gap, belt drive.
- 33"x12" L. & S. heavy q. c. g., belt.
- 36"x22" New Haven late q. c. g., belt.

## Drills

- 1 & 2 spindle Aveyomatics.
- 1, 2, 3, 4 spindle High Speed. Allen and Leland & Gifford.
- 24" & 30" sliding head, tapping, m. d. Snyder and Aurora, single spindle.
- 3" Cincinnati-Bickford plain radial.
- 4" Niles Universal radial.
- 5" Cincinnati-Bickford plain radial.
- 6" Amer. Tri. Purp. plain rad., m. d.
- 6" N. B. P. right line radial, motor dr.

## Milling Machines

- Type "C" Becker Vertical, s. p. d.
- No. 2 B. & S. Universal.
- 36"x36"x14" Ingersoll planer type.
- No. 3-B Milwaukee pl., late type.
- No. 25 Becker Plain, (3).
- No. 2 Kempnith Maximiller, m. d.
- No. 3 Hendey plain, cone drive.
- No. 3 Cincinnati plain Hi-Pr. gd. hd.
- No. 2 Knight vert. mil. & drill., s. p. d.

## Brakes

- 13"x3/16" Geo. Ohl brake, belt.
- 10"x10 ga. Loy & Nawrath, belt.
- 10"x¼" Loy & Nawrath brake, m. d.

## Shapers & Planers

- 72"x72"x18" D. & H. motor drive.
- 42"x47"x10" D. & H. Openside.
- 16" & 20" Smith & Mills, back geared.
- 20" G. & E. High Duty gear box m. d.
- 24" G. & E. High Duty back gd. cone.
- 24" American Heavy gear box, m. d.

## Grinders

- No. 2 Cincinnati centerless, m. d.
- 84" Diamond Face, motor drive.
- 16"x48" Landis crankshaft self con.
- No. 65 Heald cylinder, Like new.
- 10"x24" Landis self contained.
- 14" Pratt & Whitney Vert. Surf., (2).
- No. 3 Abrasive Surface, m. d.
- No. 19, 53 Besly vertical disc, belt.

## Presses

- No. 40 Perkins o. b. i., flywheel, (2).
- No. 50 Perkins o. b. i., flywheel, (4).
- No. 79-B Stoll, geared.
- No. 77 Bliss-Consolidated, geared.
- No. 203D Toledo, st. s., d. c., flywheel.
- No. 74 Bliss-Cons. gap frame flywheel.
- No. 72 Cons. gap frame, geared (2).
- No. 5 V. & O. open back inc. fly.
- No. 8 Perkins knuckle joint embossing.

## Shears

- 6"x10 ga. Niagara 16" throat, m. d.
- 8"x3/16" Ohl squaring, m. d.
- 13"x¼" Hyde Park, 18" throat, m. d.

## Miscellaneous

- No. 23 & No. 34 New Britain Auto. Chucking.
- ¾"-1¼" Cleveland Automatics, (2).
- 1¼" & 1½" Gridley Model F.
- 50"x¾" Niles Straightening Rolls.
- 10"x½" Bertach Bending Rolls.
- 20"x1" Wickes Bending Rolls, m. d.
- 8" Jarecki Pipe Machine.
- No. 13 B. & S. Standard Gear Cutter.
- 103"x20" G. & E. Gear Cutter.
- 1½" Landis Single Bolt Cutter, belt.
- No. 600 DeLaval Multiple Clarifier.
- 48" Ryerson Friction Saw.
- 3A Warner & Swasey Turret Lathe.

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11/32	1.20	.48	1 3/4	3 1/2	11/16	2.40	.96	3 3/8	7 3/8
3/8	1.20	.48	1 3/4	3 1/2	45/64	2.60	1.04	4 1/16	8 1/8
13/32	1.40	.56	1 7/8	3 3/4	23/32	2.60	1.04	4 1/16	8 1/8
7/32	1.40	.56	1 7/8	3 3/4	47/64	2.60	1.04	4 1/16	8 1/8
15/32	1.40	.56	2	4	5/8	2.60	1.04	4 1/16	8 1/8
1/4	1.40	.56	2	4	25/32	2.80	1.12	4 3/8	8 3/4
5/16	1.50	.60	2 1/8	4 1/4	13/16	2.80	1.12	4 3/8	9 1/8
9/16	1.50	.60	2 1/8	4 1/4	27/32	3.10	1.24	4 11/16	9 3/4
19/32	1.50	.60	2 1/4	4 1/2	7/8	3.10	1.24	4 3/8	9 3/4
21/32	1.50	.60	2 1/4	4 1/2	29/32	3.40	1.36	5	10
11/16	1.60	.64	2 3/8	4 3/4	15/16	3.40	1.36	5 1/8	10 3/4
23/32	1.60	.64	2 3/8	4 3/4	31/32	3.70	1.48	5 5/16	10 3/4
25/32	1.60	.64	2 1/2	5	1	3.70	1.48	5 5/16	10 3/4
3/8	1.60	.64	2 1/2	5	1 1/16	4.00	1.60	5 5/8	11 1/4
25/64	1.75	.70	2 5/8	5 1/4	1 1/8	4.30	1.72	5 13/16	11 3/8
13/32	1.75	.70	2 5/8	5 1/4	1 5/16	4.60	1.84	6	12
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7/16	1.75	.70	2 3/4	5 1/2	1 7/8	5.20	2.08	6 1/4	12 1/2
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31/64	1.90	.76	3	6	1 1/2	6.40	2.56	6 1/2	13
1/2	1.90	.76	3	6	1 9/16	6.80	2.72	6 1/2	13
33/64	2.00	.80	3 1/8	6 1/4	1 5/8	7.20	2.88	6 1/2	13
17/32	2.00	.80	3 1/8	6 1/4	1 11/16	7.60	3.04	6 3/4	13 1/2
35/64	2.00	.80	3 1/4	6 1/2	1 3/4	8.00	3.20	6 3/4	13 1/2
9/16	2.00	.80	3 1/4	6 1/2	1 13/16	8.40	3.36	6 3/4	13 1/2
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- 2—No. 3 Cincinnati cone drive, univ.
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- No. 3 Cincinnati vertical.

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- 2—2 spindle No. 2 Avey high speed.
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- 18"x8' Monarch quick change.
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- 16"x8' Monarch quick change.
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- 10 Coulter automatic threading.

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- 2—No. 65 Heald cylinders.
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 Grinders, No. 14-20 Gardner disc b. b., m. d.; No. 2 Oakley p. f., tool & cut.; No. 18H Portable Safety Grinder, Motor Drive.

1 & 2 B. & S. plain, univ.; No. 2 Cincinnati univ., No. 2 Kempsmith univ., 24" Cincinnati duplex.  
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 Planers, 24x6' & 8' Gray, 1 head.  
 Power punch, Nos. 4 & 6 Whiting.  
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16"x8' **SIDNEY LATHE**, geared head, motor in base, taper attach.  
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 Lathes, 16x6 Monarch grd h.; q. c. g. tap. att.; 16x8 Monarch; 17x8, Le-Blond grd. hd., m. d.; 18x8 Whitcomb-Blaisdell m. d., t. a. & chks.; 18x44 Putnam, gap.  
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No. 2 Norton Universal Cutter and Reamer Grinder, Belt Drive.

Several No. 2 Brown & Sharpe Surface Grinders, Belt Drive.

No. 3 Diamond Surface Grinder, with 48"x12" Magnetic Chuck B. drive.

Allen High Speed Sensitive Drills, Two, Three, Four and Six Spindles.

16" Cincinnati Gear Hobber, Single Pulley Drive.

60"x48"x12" Niles Bement Pond Planer, two heads on cross-rail, one side head. Belt or motor drive.

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Drills, 1 & 4 sp. Avey & Allen, h. s.  
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Grinder, No. 11 B. & S. plain, s. con.  
Grinders, Nos. 2, 3 W. & M. surf. cks.  
Grinder, No. 2 B. & S. cutter.  
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Lathe, 10"x4" Champion, bench.  
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Lathes, 12"x5" Hendey, q. c. g., t. a.  
Lathe, 12"x6" Hendey, q. c. g., t. a.  
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Lathe, 15"x8" C. & S. lathe, q. c. g.  
Lathe, 18"x8" Walcott q. c. g., t. a.  
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Lathe, 20"x42"x8" Fay & S., ext. bed.  
Mill, 3" bar Lucas hor. boring, s. p. d.  
Miller, No. 4 Burke hand, pwr. long f.  
Miller, No. 25 Becker plain.

Miller, No. 0 B. & S. plain, rack feed.  
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Miller, No. 2 Rock'd univ., s. p. d.  
Miller, No. 2 Rock'd plain, s. p. d.  
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Press., No. 15 Excelsior foot.  
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Shaper, 15" Hendey friction.  
Shaper, 16" Gould & Eberhardt, b. g.  
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Shaper, 28" G. & E., high duty, c. dr.  
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## Index of Advertisers

<b>A</b>		<b>F</b>	
Abart Gear & Machine Co.....	51	Flexible Steel Lacing Co.....	
Acme Industrial Co.....	51	Flynn Manufacturing Co.....	48
Alamo Engine Co.....		Foot-Burt Co.....	19
American Machinery Co.....	107	Ford Machinery Sales Co.....	91
American Tool Works, Inc.....		<b>G</b>	
Angle Steel Stool Co.....	52	G. D. S. Shearing & Punching	
Armstrong-Blum Mfg. Co.....		Machine Co.....	45
Inside Front Cover		Gallmeyer & Livingston Co.....	66
Armstrong-Bray & Co.....	60	Genesee Mfg. Co., Inc.....	59
Armstrong Bros. Tool Co.....	52	George, James W.....	94
Atlas Press Co.....	29	Gerding Bros.....	68
<b>B</b>		Goldman, Harvey H.....	107
Baldor Electric Co.....	61	Gorton Machine Co., Geo.....	4
Baumbach Mfg. Co., E. A.....	67	Graham Manufacturing Co.....	37
Belyea Company.....	80	Grant Mfg. & Machine Co.....	65
Bennett Machinery Co.....	81	Grob Brothers.....	9
Bernstein & Co., Gro. M.....	108	<b>H</b>	
Beverly Throatless Shear Co.....	62	Hamilton Tool Co.....	62
Bleser Mfg. & Mchy. Co.....	77	Hardinge Brothers, Inc.....	
Bradley Machinery Co.....	107	Front Cover	
Brotherhood & Sons, Percy M.....	104	Hartford Special Machinery Co.....	41
Brown Machinery Co.....	86	Haskins Co., R. G.....	8
Brownell Machinery Co.....	77	Herben Machinery Equipment Co.....	78
Buffalo Forge Co.....	6	Heuser Manufacturing Co.....	
Burke Machine Tool Co.....	48	Hill-Clarke Machinery Co.....	93
<b>C</b>		Howarth Machinery Co., C. C.....	104
Carlson Mfg. Co., C. H.....	60	<b>I</b>	
Carroll & Son, Wm.....	68	Illinois Testing Laboratories, Inc.....	67
Chicago Die Casting Mfg. Co.....	59	Imperial Metal Products Co.....	82
Chicago Electric Co.....	94	Indianapolis Machinery & Supply	
Chicago Gear Works.....	64	Co.....	105
Chicago Rawhide Mfg. Co.....		International Machinery Co.....	82
Chicago Tool & Engineering Co.....	62	Interstate Machinery Co.....	103
Chicago Wheel & Mfg. Co.....	56-57	Iroquois Machinery Co.....	106
Cincinnati Bickford Tool Co.....	3	<b>J</b>	
Cincinnati Mchy. & Supply Co.....	88	Johnson & Sons Mchy. Co., Wm. C.....	84
Cleereman Machine Tool Co.....	46	Johnson Tool Co.....	64
Clements Mfg. Co.....	54	Jones Mch. Tool Co. Cincinnati.....	87
Clinton Machinery Co.....	102	<b>K</b>	
Consolidated Used Machinery		Kennard-Raftin Machinery Corp.....	95
Mart, Inc.....		Kutmore Tool Co.....	60
Cullman Wheel Co.....	Back Cover	<b>L</b>	
<b>D</b>		L-W Chuck Co.....	55
Davis Machinery Co.....	84	Lake Machinery Co.....	100
Dreis & Krump Manufacturing		Lewthwaite Machine Co., T. H.....	
Company.....	Inside Back Cover	Lovejoy Tool Works.....	44
<b>E</b>		Lowell Wrench Co.....	25
Eastern Machinery Co.....	90	Luma Electric Equipment Co.....	49
Eisler Engineering Co., Inc.....	60		
Emerman, Louis E.....	92		
Easley Machinery Co., E. L.....	86		

Please say "Blue Book" when writing to advertisers.

# Index of Advertisers—Continued

## M

McDonald Machinery Company.....	80
Mall Tool Company.....	53
Marr-Galbreath Machinery Co.....	78
Martin Tool & Die Works, J. E.....	42
Massachusetts Gear & Tool Co.....	50
Maxwell Co., F. A.....	23
Mendes Cutting Factories.....	
Meyer Blower Co., Wm.....	85
Midwest Equipment Co.....	106
Miles Machinery Co.....	102
Molitor Machinery Co., Chas. L.....	85
Morey Machinery Co., Inc.....	99
Morris Machinery Co., Inc.....	108

## N

Nicholson & Co., W. H.....	43
Norgren Co., C. A.....	53
Norton-Broadway Machinery Co.....	105
Numberall Stamp & Tool Co.....	66

## O

O'Brien Machinery Co.....	81
Ohio Gear Co.....	55
Ohio Machinery & Supply Co.....	83
Oliver Instrument Co.....	39
Osborne & Sexton Mch. Co.....	101
Ott Machinery Sales Co.....	82

## P

Pels & Co., Inc., Henry.....	39
Praet & Whitney Co.....	17
Procurist Safety Chuck Co.....	41
Production Machine Co.....	54
Progressive Tool & Cutter Co.....	45
Pyrometer Instrument Co.....	62

## R

Reliance Machinery Sales Co.....	84
Renu Tool Company.....	47
Reynolds & Son, Geo. T.....	98
Ridge Tool Co.....	27
Rigid Tool Holder Co.....	46
Riverside Machinery Depot.....	97
Rosenkranz & Weisbecker.....	106
Russell Boring Bar Co.....	64
Russell Machine Co.....	106
Ryerson & Son, Inc., Joseph T.....	

## S

Saw & Knife Specialty Co.....	50
Scott-Bansbach Machinery Co.....	83
Scully-Jones & Co.....	104
Seager Carbon Co.....	44
Segal Machinery Co.....	85
Sharpville Boiler Works Co.....	77

Sheldon Machine Co.....	58
Simmons Machine Tool Corp.....	92
Skilaw, Inc.....	7
South Bend Lathe Works.....	21
South Side Machine Co.....	35
Stackbin Corp.....	33
Standard Electrical Tool Co.....	35
Steege Machinery Co., W. L.....	37
Stockman, John A.....	87
Strand & Co., N. A.....	65
Strong, Carlisle & Hammond Co.....	103
Studebaker Real Estate Corp.....	97
Sun Machinery Co.....	101
Sundstrand Machine Tool Co.....	13
Sutton Tool Co.....	

## T

Tannewitz Works.....	64
Taylor Machine Co.....	49
Threadwell Tap & Die Co.....	66
Timesaver Products Co.....	

## U

United Machinery & Supply Co.....	77
Used and Rebuilt Machinery 77 to 108	

## V

Valley Electric Corp.....	63
Victor Machinery Co.....	98
Victor Machinery Exchange Inc.....	96

## W

Walls Sales Corporation.....	42
Walton Co.....	43
Wardwell Manufacturing Co.....	58
Waters Machinery Co., C. H.....	86
Weber, H. J.....	89
Wells Manufacturing Corp.....	15
West Penn Machinery Co.....	79
Western Tool & Mfg. Co.....	66
White Dental Mfg. Co., S. S.....	
White Machinery Co., A. D.....	99
Whitney Metal Tool Co.....	47
Wiener Machinery Co., Inc.....	104
Wigglesworth Machinery Co.....	77
Wilson, K. R.....	31
Wittek Manufacturing Co.....	63
Wolnick Machinery Sales.....	84

## Z

Zeeve, Alex.....	87
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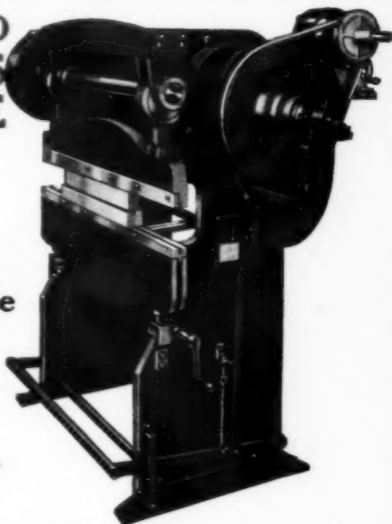
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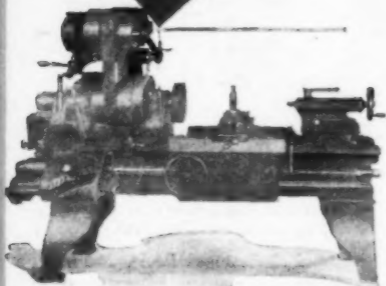
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